

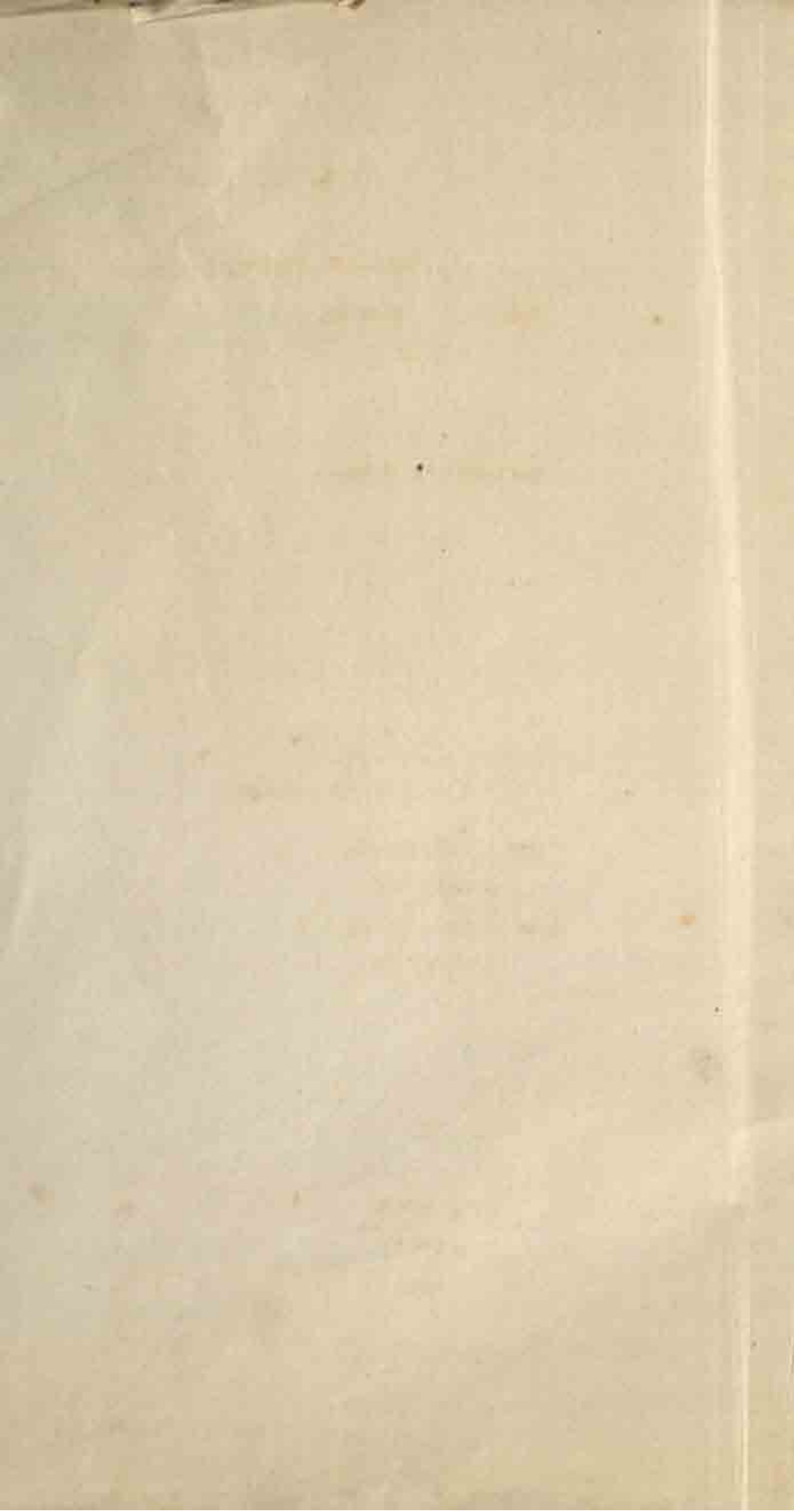
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ESSAYS ON HARAPPA  
CULTURE

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Sankarprasad Hajra



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DEDICATED

To the memory of  
My grandmother  
SURABALA MAJRA

24



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## II

## INTRODUCTION

Sir John Marshall - a great name in the field of researches on Harappa Culture, and his general views about Harappa and Mohenjodaro are accepted by the Indologists of the world. Again it is a well known fact that a belief based on ill-logic can hardly be abolished in a short period of time even by rigid analyses. The Indus Valley Civilization (Harappa Culture) is depicted by the Marshallians far more mysterious than what it is. Marshall concluded that the civilization was non-Aryan in character and a contemporary of the Assyrian and Sumerian ages. Then he tried to annul the historical contradictions of his views by an interesting, imaginative description which gave birth to a new history void of a vestige of predetermined historical fact.

In fact, Marshallians tell us a pompous mythological story veiled in the curtain of mysticism in order to describe the creator and the period of the civilization by rampant scholasticism. All these titletattles are logically criticised in the essays.

To me, it seems that the civilization is basically different and comparatively recent and it may have certain possibility to be a distinct and developed phase of Vedic civilization.

+++++

The last chapter of the book is the tentative decipherment of the mystic inscriptions of Harappa and Mohenjodaro. I have tried to decipher the inscriptions by attributing tentative phonetic values to the pictographs. There may be defects in some cases to do so, but I am sure that the defects will be corrected through criticism by learned readers. I think that exact phonetic values have been attributed to ॐ, ५, ॥, ॐ, ⊗, E, Y, Q, ◇ and to ५. The language of the inscriptions is Sanskrit which will be clear from the tables. Almost all the inscriptions contain distinct Aryan names, few place names.

### III.

For about 45 years we are inclined to the mysticism of Marshallians, but even now we have found out nothing substantial from it. It is as mystic as it was before, an unsolvable puzzle of the age. Now, I think, it is necessary to grasp new hypotheses and to judge the validity of the hypotheses from new out looks. Marshallians think that the civilization was something highly developed emerging from out of nothing. I think that the civilization was an inevitable event, following of the necessity in the chain of historical development.

Old pedantic Marshallians from all parts of the world, I am afraid, will launch severe attack upon my hypothesis as their beloved mythological 'palace of cards' will be endangered by my arguments. But I deserve congratulations from fresh young scholars who are highly energetic to frame out new hypotheses to solve the puzzle of the age.

To decipher the seals tentatively, I was highly inspired by Mr. Indranath Bijmunder to whom I am really grateful. I wish to thank now Mr. Subhakar Bijra, Mr. Saradinshi Ghosh and Mr. Mahabrat Singh-thakur who helped me in various ways to represent the essays.



### DYING HARAPPA AND THE NEW-COMERS

(There were two cemeteries in Harappa the Cemetery R - 37 and the Cemetery H ( $H_I + H_{II}$ )). According to specialists Cemetery R-37 - the earlier cemetery was the cemetery of the Harappans, whereas Cemetery H ( $H_I + H_{II}$ ), the later cemetery was the cemetery of the New-Comers - the Vedic Aryans.

I have tried to establish that the Cemetery R-37 was not the cemetery of the Harappans. It was the cemetery of the New-comers - the Irano-Caspians i.e. the second wave of the Aryans who entered India marching through Iran. From different sources, it can be proved that those Irano-Caspians entered India ca 1000 B.C. or even later.

This conclusion has far reaching effect on the study of Harappa Culture, as the New-comers dwelt on the ruins of the Harappans at a time when the centre of Vedic culture was shifting from the Indus valley to the Gangetic plain, definitely leaving the ruins of their cities in the region.

This has forced me to infer that the Harappans were the Vedic Aryans - the first wave of the Irano-Caspians in India.

(This paper is written from this standpoint).

#### 1. Problem :

Before the excavations at Harappa and Mohenjodaro, it was settled by the scholars that the Aryans were the creators of Indian civilization in ancient time (6 preface V) and though there was practically no doubt that they came from somewhere outside India, yet the time of their arrival was a matter of some speculative discussions without any rigid set of reasons. After the establishment of relationship between the Hittite Kings and Aryans, it was common among the specialists to consider the arrival of the Aryans in India at least after 2000 B.C.

When the chalcolithic culture of Harappa and Mohenjodaro came to light, Marshall (6 preface V-VI; pp.102-112) and Sayce, (19, p.6) the veteran Assyriologist recognised startling similarities between this non-Aryan (also Pre-Aryan) Indian civilization and Sumerian civilization and considered this Indian civilization flourishing before 2500 B.C., with the support of the then archaeologists (5, p.218).

But actually, studying of the Indian materials in western setting started from 1933 when Childe compared the chalcolithic pottery with the pottery of West Asian sites (3, pp.15-25).

In the year 1931 Stein discovered the cemetery of Shahi Tump and observed that the graves (associated with different foreign objects not known to Harappan people) had been dug into the ruins of the Harappan period (7, pp.88-105).

In 1934 Majumder found out the type site Jhukar where a post Harappan culture - late Jhukar culture was stratified just over the Harappan level (12, p.9) and a good number of pottery found in this level was quite alien to Harappan people. During the excavations of 1933-34 at Harappa a cemetery which is now known as Cemetery - H with complete burials and post exposure pot burials associated with a beautiful polychrome pottery different from that of Harappa culture was discovered. The cemetery as thought by the excavator was contemporary with the time of the last occupational level (not reached at Mohenjodaro) of the city (Harappa); and related with foreign conquest (22, p.235).

Thus it was being apparent that a new culture different from that of the Harappans existed in the region, after the dissipation of Harappan culture.

In 1934 Childe the well known contributor to the history of the Aryans equated the Cemetery H people with the Aryans (10, p.223). In the same paper he also pointed out the uses of (i) mace heads at Mohenjodaro and at Babylon (10, p.217), (ii) beads of frit or stone of specialised types at Mohenjodaro and in the Early



Dynastic graves of Sumer (10, pp.268-269) and (iii) the axe adze, at Mohenjodaro and at Tepe Hissar III (10, pp.268-269). One thing should be clear here that Childe would think that the Aryans entered India circa 1400 B.C. (or later, 4, p.31) and he accepted that Harappa culture ceased to exist circa 2500 B.C. (19, p.6) and as Cemetery H was thought to be related with the New-comers, so he put the hypothesis that the Cemetery H people might be the Vedic Aryans. In 1936 Childe realised the exotic character of Chanhudaro pins and wrote an illuminating commentary on the distribution of the type (14, pp.113-119).

In the same year R. Heine - Geldern studied four weapons, e.g. (i) a trunnion axe from Kurram Valley, (ii) a bronze dagger from Fort Munro, (iii) copper swords with antennae hilts from the Gangetic plain and (iv) a bronze axe-adze from Mohenjodaro. After comparisons with the similar weapons from ancient cultural zones outside India he decided that those Indian weapons indicated a date between 1200 B.C. and 1000 B.C. or even later. Heine-Geldern attributed the users of these foreign influenced articles to the Vedic Aryans and tried to indicate the arrival of the Vedic Aryans in India after 1200 B.C. (15, pp.87-113). In this year B.N. Datta pointed out the different modes of disposal of the dead prevailed among the Vedic Aryans and their similarities with the system of disposal of the dead of Cemetery H people (16, pp.223-307; 17, pp.1-68) in order to defend the hypothesis that Indus culture and Vedic Aryans belonged to the same ethnic cultural group. In 1939 Childe compared round bead seals of baked clay and a few button seals of stone from Jhukar culture with those of Tepe Hissar (19, pp.13-14) and thought that Sheshi Tump burials might foreshadow the still inferential Aryan invasion in India (19, p.15).

In the year 1940 Mr. Vats in course of analysis of the paintings on the prehistoric pottery of Cemetery H excavated at

Harappa compared the paintings of post exposure pot burial pottery with rites, rituals and beliefs contained in the hymns 14, 16 and 18 of the Xth Mandala of the Rigveda, though it was 'not intended to suggest more than a comparison' on account of the characteristic system of disposal of the dead (22, pp.208-209) of the Cemetery H people. Gordons in this year studied the animal headed pins obtained from different Indian sites in western background (21, p.65).

In 1943 Mackay published the reports of the excavation 1935-36 at Chanhudaro where Jhukar Culture (Chanhudaro II) was stratified over Harappan period (Chanhudaro I; 27, p.103).

In the meantime a site of exceptional importance - Tape Hissar was excavated in the Northern Persia.

In 1926 Childe supported the orthodox view that the eastern wing of the Indo-Iranian people descended into India not much later than the arrival of the Western wing of the Indo-Iranian into Mitanni (4, p.41).

Tape Hissar was excavated in 1931 and Schmidt suggested the following dates for its first three periods (from below) of the site:

Hissar I - before 3000 B.C. to ca 2500 B.C.

Hissar II - ca 2500 B.C. - ca 2000 B.C.

Hissar III - ca 2000 B.C. - 1500 B.C. (9, p.341, p.366, p.390, p.452, pp.472-73).

In 1934 Kappers published his famous work "An Introduction to the Anthropology of the Near East" which placed sufficient reasons to consider the neolithic longheads of central Europe, the dolicho-cranials of Hissarlik III and Alisher IV, Damghan people (Tape Hissar), the dolicho-cranials of Mohenjodaro and Hal, the Punjabis, the Zoroastrians, the Hattis and the Dardous, coming from the same ethnic stock which might be called by the name - the Indo-Europeans (11, p.124).

Kappers suggested the dates of Tape Hissar as follows :-

Period I - 3500 B.C. - 3000 B.C.

Period II - 3000 B.C. - 2500 B.C.

period III - 2500 B.C. - 1500 B.C. (11, p.94).



Later on, Krogman and Schmidt modified the chronological position of the periods and suggested as follows :-

Hissar I - Before 4000 B.C. to Ca 3500 B.C.

Hissar II - Ca 3500 B.C. to 3000 B.C.

Hissar III - Ca 3000 B.C. to Ca 2000 B.C. (23, p.6).

Thus the existence of the Indo-Europeans in Tepe Hissar upto 1500 B.C. (as suggested by Schmidt) or 2000 B.C. (as modified by Krogman and Schmidt) was not going against the hypothesis that the Cemetery H people were the Vedic Aryans.

In 1935 Herzfeld writes that after the beginning of the 1st millenium B.C. a new people, the Aryans brought the change of the composition of the population of Iran (13, pp.6-7) Herzfeld also writes that three great movements of the Aryans took place from the Aryan homeland 'Eranvej' - the land of the two rivers Oxus and Ixartes, Khwarizm and Samarkand : first, the Indo Aryan migration which happened between 1500 B.C. and 1450 B.C., the second, Iranian migration which took place after the beginning of the 1st millenium B.C. and the third, the Sak migration (13, pp.7-8).

But in 1942 D.E. McCown suggested that Hissar might have ceased to be inhabited at the very beginning of the Akkadian period (24, p.52). Thus the disappearance of the Indo Europeans before 2500 B.C. from Tepe Hissar makes the appearance <sup>of</sup> them in Cemetery H after 1500 B.C. chronologically incompatible. So in 1942 Childe from Indian stand point disputed feebly on the McCown's dating of Tepe Hissar III C (25, pp.357-358). It is Stuart Piggott who through many research papers has established a close connection between Hissar III and Jhukar Culture (26, p.180) and has tried to adjust the so called gap between the disappearance of Tepe Hissar people and the appearance of the New comers in the Indus Valley.

He has suggested a late date for Tepe Hissar (- 'not earlier than Akkadian probably some centuries later', 26, pp.176-177) and has equated Hissar III with Jhukar Culture and has established the contemporaneity of Jhukar, Shahi Tump, the last phase of Mohenjodaro, Anau III and Hissar III and has regarded them sites of India. and



Baluchistan as representatives of a diffuse movement of peoples eastward in the first half of the second millennium B.C. "But whether the authors of the culture spoke Indo European dialects" according to Piggott "is another question" (28, pp.24-25).

During the excavation of 1937 at Harappa a cemetery/- <sup>Cemetery</sup> R-37 was accidentally discovered. Excavation of 1946 by Wheeler proved that Stratum I of Cemetery H was much subsequent to the Cemetery R-37 and combining report and observation Wheeler showed that Stratum II of Cemetery H also was stratigraphically later than R-37 - the cemetery of Harappans (30, p.85). For the destruction of Harappan civilization Wheeler accused Indra, i.e. the Aryans on circumstantial evidence (30, p.82).

In 1946 Ross described the Ranaghundai tell in North Baluchistan, whence stratified sequences of human occupation were discovered (29, pp.284-316). In the year of 1947 Gordon classified Cemetery H pottery as Ravi I and Ravi II pottery. He placed Ravi I, Shahi Tump and Chanhudaro II (Jhukar) Culture in the chronological scale - little earlier than 1500 B.C. and Ravi II and Jhanger culture - little later than 1500 B.C. (31, p.212, p.239).

In the years 1947-48 Piggott wrote detailed notes on certain pins and a mace head from Harappa (32, pp.29-38); which were touched by Childe before many years of the publishing of this paper. In 1948 Schaeffer assigned the date of Hissar III to the period 2300-2100 B.C.

In 1949 Piggott agreed to the date scheme of Hissar III as given by Schaeffer (33, p.63) and related the New comers of Harappa culture and the people of the cairn burials of Baluchistan with Hissar people and Sialk B cemetery people respectively assigning the date of the new comers to 2000 B.C. - subsequent few centuries for the former and to 1100 B.C.-1000 B.C. for the later (33, pp.240-241).

In 1950 Gordon suggested that the people of Jhukar culture invaded the Indus valley circa 1800 B.C. (35, pp.56-57) and this people might be 'umman manda' (known from Babylonian, Assyrian and Hittite texts) - a mixed people which included a branch of Indo-Aryan stock (35, p.57).

He also suggested that Cemetery H (more specifically Ravi II people) people was the Vedic Aryans coming much after the arrival of first Aryan speaking mixed people umman manda, (Jhukar people) in the region (35, p.58).

In the same paper Gordon pointed out that the cairn burials of Dambkoh, Jiwanri, Zangian and Moghul Ghundai are reminiscent of Necropole B at Sialk and the contents of some of the cairns of Moghul Ghundai are similar to those of the graves of the Cemetery B at Sialk (35, p.66). The people of cairn burials would use iron objects and their earlier date, according to Piggott is ca 700 B.C. in Baluchistan.

In 1950 Lal pushed the date of PG ware (generally thought to be associated with the Aryans) towards 1000 B.C. to fill up the vast interval of 1500 years between the Harappa culture <sup>of</sup> the third - second millennia B.C. and the early historic periods of circa fourth-fifth centuries B.C. (34, pp.89-93).

In 1951 Lal has pointed out that it is only mixing up of issues to consider the weapons of the Gangetic copper hoards as connected with the Aryans. He showed that these Copper hoards might have been associated with ill-fired ochre washed ware and the author of these weapons might be Proto-Australoid (37, p.39) tribes. His conclusion that the hoards need no longer be associated with the Vedic Aryans as was thought by Heine-Geldern and S.Piggott previously, has been supported by Childe, Piggott, Wheeler and Waimendorf (38, p.93). Lal is right definitely in connecting the Gangetic Copper hoard with the Proto-Australoid tribes, but the predominant western influence in the antennae swords as shown by Heine-Geldern is undeniable.

In the same year Beatrice De Cardi showed the affinities of Londo ware with the Persian Pottery of Sialk VI Cemetery B and assigned the site Londo (discovered by her) to about 1100 B.C. or later (36, pp.71-72; 45).



In 1954 Ghirshman wrote on Tepe Hissar - "If it is dated to the middle of the 2nd millenium, the cause of this destruction could be attributed to the movements of Indo-Europeans described above. If it is brought down to the last centuries of the same millenium, it may be that the cause was a new wave of Indo-Europeans, this time bringing the Iranians on the plateau" (39, p.63).

Thus, just like Herzfeld, he points out that two waves (excepting the Sakas) of the Indo-Europeans might have come in Iran in two different times.

In 1956 Heine-Geldern has successfully shown, that the trunnion axe from the Kurram valley, a bronze dagger from Fort Munro, Copper swords with antennae hilts from the Gangetic Valley, an animal headed copper rod from the upper most level of Harappa, a pin topped by two deer heads from Mohenjodaro and the much discussed bronze - axe adze from Mohenjodaro indicate a date between 1200 B.C. - 1000 B.C. So he advocates for his previously stated hypothesis that Vedic Aryans came to India between 1200 B.C. and 1000 B.C. (40, pp.136-139). In the same year Walter A. Fairservis has thought, as a whole, the date 1500 B.C. for the end of Harappa culture is too early and suggested probably more accurate date near 1200 B.C. for the disappearance of the Harappans (41, p.155). He/also made suggestion to consider the Londo-ware people as candidate for 'a maker of the period of the Aryan civilization' (41, p.155).

In 1959 Wheeler has thought that if the Aryans concerned with the P.G. ware are dragged into the picture, then, they may represent the second phase of their invasion of India (44, p.28).

In 1962-63 Lal has published the results of C-14 dating (50, pp.203-221) worked out by different laboratories which have gain pushed the final phase of Harappa towards 1300 B.C. Thus the reconstruction of the so called archaeological gap between the disappearance of Harappa culture and the arrival of the Aryan has been solely dismissed. Really, the so called C-14 datings of ancient periods of different

archaeological sites have given a shock to the systematic thoughts and works of many well known archaeologists and they seem now to reconcile their archaeological researches with this 'Scientific method' of dating. But we beg to state, that this C-14 dating of ancient Indian sites, what misfortune it may be, is solely worthless; either for the chosen defective standard or for inaccurate laboratory works or for any other unknown causes.

In 1964 D.P. Agarwala has sought to relate the Banasians with the first wave of the Aryans (54, p.200).

In the same year Ghirshman has put the hypothesis that the Iron user Sialk VI Cemetery B people was the Iranians who entered Iran in 1000 B.C. at a time when the Vedic Aryans entered India (52, pp.3-4).

In 1965 N.R. Banerjee has tried to show that the Vedic Aryans would know the uses of iron when they entered into India (57, p.144). He has also argued to condense the two distinct migration of the Caspians into one which disintegrated into two - the Indo Aryans and the Indo Iranians when they reached Iran or just before the Iranians marched into Iran shortly after 1200 B.C. (57, p.126).

In 1966 Kennedy and Malhotra pointed out striking similarity of the Navasa people with the people of Harappan Cemetery R-37 (59, p.120) and Sankalia noted the survival or a continuation both of physical types and burial practices from Harappa to Navasa stretching from about 2500 B.C. to 1000 B.C., though there was a great difference between the cultures of these two places (59 Foreword). At the 1st half of this decade Dales (51, p.36) and Raikes (53, pp.281-89; 58, pp.196-203) have raised objections against Wheeler's hypothesis of the destruction of Harappan cities by the Aryans (60, p.348, F.N.37).

In 1968, D. K. Chakrabarti has published a paper on the Aryan hypothesis in Indian Archaeology (60, pp.343-358). This paper has been much helpful to us to construct the shape of this problem.

We are now trying in the following paragraphs to solve the problem, mainly depending upon the view of Kappers :-



We have used the terms - the Caspians for the Indo Europeans and their synonyms; the Indo Caspians for the Vedic Aryans and their synonyms; the Irano-Caspians for the Iranian Aryans and their synonyms taking into account the suggestions of S.S.Sarkar (55, p.94).

2. Both the peoples of Cemetery R-37 and Cemetery H of Harappa were new comers:

Now let us try to solve the problem who the peoples of the Cemetery R-37 and Cemetery H were and whether they were the local peoples or New comers. Harappan pottery associated with the Cemetery R-37 does not necessarily mean that they were the Harappens as pottery is generally non-portable for a great migration and there is fair possibility that the New-comers might use the pottery of the local people of that region at least for some time where they migrated from a very distant land. Thus we see that it is not possible at the present state of knowledge to answer the question precisely.

But a tentative conclusion can be drawn from the analysis of Marshall on the problem.

(i) It is apparent from the work of Stein that cremation was the chief process of disposal of the dead among the people of the Indus culture (49, pp.54-57) and inhumation was the dominant method of disposal of the dead among the people of the 'Persian' culture (6, pp.89-90) and also of the Irano Caspians before their conversion to Zoroastrianism(1, p.505). And so it can be decided that the Harappens would cremate the dead bodies and this wretched process has made much disadvantage to discover their skeletal remnants. It comes then that both the Cemetery R-37 people, and the Cemetery H peoples were New-comers to Harappa (ii) The racial analyses of the peoples of Tepe Hissar, Anau, Shahi Tump, Cemetery R-37 and Cemetery H support this conclusion. The problem is connected to a large extent with the north Persian sites e.g. Hissar and Anau.

From the excavations of Tepe Hissar we know that a homogeneous population of cranial index 70-71.9 (average 70.8) for the male (and 72.8 for the female) was living in Tepe Hissar I, II and III (11, p.96);

in the period II, almost all the indices are dolichocranials whereas in the period III, though the majority are dolichocranials, yet a 77-79 cranial strain can be observed (11, p.124).

During the final phase of the Harappa culture peoples entered into Baluchistan; and whether they were responsible for the disappearance of the Harappans is a separate issue. Shahi Tump man as Piggott has pointed out can be considered as one representative of the New comers (33, p.221) who on their way to reach India buried one of their warriors.

It will be seen from the analyses of the cranial indices of the skulls of Cemetery R-37 and Cemetery H - open and jar burials, that it is the skulls of Cemetery R-37 which show close resemblance with Tepe Hissar skulls, but not with the Cemetery H skulls to such a large extent (open and jar burials). Ukrainian (cranial index 75; 22, p.123, Fig.65) and Irano-Scythian (cranial index 78; 22, p.125) strains are prominent in the skulls of Cemetery H, though some of the skulls are dolichocranials. Hence it is absurd to think that Cemetery R-37 people was other than the New-comers.

In North Kurgan (at Anau) and South Kurgan, Damghan people settled temporarily (11, p.99, p.101) and the same people inhabited at the third city of Hissarlik (11, p.162) Alishar IV, (11, p.106) Hanoi Tepe B<sub>1</sub> (11, p.104) and they are closely related with the Neolithic long heads of Central Europe (11, p.98) and also to some present peoples e.g., the Baltis (11, p.114) the Dardous (11, p.114) the Punjabis (11, p.95, p.115) and the Zoroastrians (11, p.24). This people was uniquely identified by Kappers as the Caspians (Indo-Europeans; 11, p.112). Thus we can conclude that the R-37 Cemetery people might be a branch of the Damghan people and the Cemetery H people might be considered as mixed Damghan people containing strains of local people on their later movements towards India.

3. Evidence that the Cemetery R-37 people was the Caspians and the Cemetery H peoples were mixed Caspians.



A lot has been said concerning the racial affinities of the peoples of different chalcolithic Indian sites by Sewell and Guha who have much used the then terms like 'Mediterranean', 'Proto Australoid' etc. which seem after Kappers to be not so useful for the racial analyses of the peoples of Harappa. Most interesting and trustworthy method of representing a people known only by their skulls is simply to represent them by their cranial indices and it is highly probable that the cranial index 70-71.9 (for the male) though not in itself sufficient for the diagnosis of a race, may have a great typognostic value to indicate a race (11, p. 96) particularly for the ancient peoples of Near East. Frequency distribution curves for the comparisons of the cranial indices as has been frequently used by Kappers can not be successfully applied for the cranial indices of Harappa, Mohenjodaro, or other Indian Chalcolithic sites, as the data are scanty.

Kappers first identified a close relationship among the peoples of Nal (11, pp. 117-118) Mohenjodaro (11, pp. 117-118) Tepe Hissar, Alishar IV, Hissarlik III, Anau, the present Punjabis, the Dardons, the Baltis and the Zoroastrians and declared that they might have come from the same ethnic stock, the Caspians. Mr. S. S. Sarker has done his best to show that the skulls of Harappan Cemetery R-37 might have a close ethnic relationship with the Caspians. His study on Racial affinities (55, pp. 72-94) of Harappan peoples is of exceptional importance and I shall advise the reader to consult it.

From the table of cranial indices of Cemetery R-37, Cemetery H<sub>1</sub> and Cemetery H<sub>II</sub>, Chanhudaro, Nal, and Shahi Tump it will be clear at once that the cranial indices of Cemetery R-37, Chanhudaro, Nal and Shahi Tump might be compared successfully with the cranial indices of the modern Punjabis, the Dardons, the Baltis, the Zoroastrians and with the cranial indices of the old peoples of Tepe Hissar (Damghan people), Anau (Kurgan people), Troy II, Alishar IV, Hanoi Tepe B<sub>1</sub> and with the neolithic long heads of Europe which are thought by Kappers as contained in the same ethnic stock, the Caspians\*.

\*"A very prominent peak (Cephalic index) at 72 is also obvious in the UP Brahmins. The Maithili Brahmins also show a peak at 72, while the Kananjia Brahmins of Bihar at 73" (53, p. 28).

On the other hand, Cemetery H<sub>I</sub> and H<sub>II</sub> peoples and the Nevassa people have two different peaks, one at 71, and the other at 75. Hence it can be assumed that these peoples are latter branches of the Caspians (mixed) containing Ukrainian element which they might have received from local peoples of Iran. Thus Childe's hypothesis that the Cemetery H people was the Vedic Aryans and Wheeler's hypothesis that the Cemetery H was the cemetery of the Harappans do not seem to carry any momentum. It is rather more correct to say that the people of Cemetery R-37 was the Caspians (whether the Indo Caspians, or the Irano Caspians, we shall decide in the latter part of the paper) whereas Cemetery H peoples were the branches of the mixed Caspians containing a prominent Ukrainian strain.

4. The Cemetery R-37 people represents the 2nd wave of the Caspians or the Irano-Caspians; but not the first wave of the Caspians or the Indo-Caspians (Vedic Aryans).

(i) Time of arrival

(a) Pigott tried to uphold Wheeler's hypothesis of Aryan invasion on Harappa culture assigning Hissar IIIc to 2000 B.C. (33, p.63) and the disappearance of Harappan culture and the appearance of the Indo-Caspians in the Indus Valley to after 2000 B.C. (33, p.240). But later on, the disappearance of Harappan culture has been pushed to ca 1800 B.C. and the appearance of the Indo-Caspians has been dragged down to ca 1000 B.C. (57, p.223). But both these assignment are antagonistic as there is no such hiatus between the Harappan level and the level of the New-comers arrived at Shahi Tump, Jhukar and Chanhudaro which could make us suppose such interval from archaeological standpoint. Hence it is either the dating of the final phase of Harappa by carbon - 14 Method (50, pp.202-221) is faulty or the time of the articles associates with the final phase of Harappan culture and the first phase of the New-comers as dated convincingly by Prof. R. Heins Geldern (40, pp.136-139) is of no value. But ~~we~~ <sup>we</sup> are here more intentioned to depend upon the archaeological system of dating as has been done by Mr. Heins Geldern and hence wish to dismiss the radio carbon dating as worthless for dating chalcolithic Indian sites.



(b) H. D. Sankalia has brought to our notice strong Sialk necropolis B and Tape Hissar strains in the pottery of NVT III (Navdatoli), Nagada, Bahala and Prekash (43 Preface xii-xiii). Really a considerable no of pottery published by him makes us suggest that a people who came into close contact with Iranian civilization were inhabiting in Malwa. The date of top layers of chalcolithic habitation of NVT III has been assigned to 1000 B.C. by Miss. E. K. Ralph with C-14 method and this date is hardly to be substantiated.

NVT III stratigraphically underlies the debris of the early historic period (IV) characterised by NBP ware. From Navasa N.B.P. ware is dated to 2nd - 1st century B.C. (46, p. 69); and there is no gap\* identified between these two periods. Hence the date of the top layers of NVT III will be assigned to the end of the first half of the first millennium B.C. (or even much later). So from the archaeological excavation at NVT and Navasa (not paying any heed to C-14 method of dating which has assigned the topmost layer of chalcolithic culture at Navasa to 984 B.C.-1238 B.C.; 46, p. 68), we can conclude that the chalcolithic cultures of Malwa with prominent Iranian elements existed most probably, at least upto 500 B.C. (or even later). Thus we see that the time of arrival of these branches of the Caspians and the mixed Caspians is circa 1000 B.C. or later but never ca 1500 B.C. which is the supposititious time of arrival of the Indo-Caspians (Vedic Aryans).

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\*As yet the full reports of all the excavations have not been published. But one thing is certain, viz., the relative stratigraphical position of the Chalcolithic culture. It generally lies over the black or dark brown soil and underlies the debris of the earliest historical cultures characterised by the use of iron, coins and black and red pottery associated with the N.B.P. and very often buildings of large-sized bricks'. The excavations at Maheswar and Navdatoli Sankali subhasas, Deo. p. 244.

(ii) Disposal of the dead

The dominant method of disposal of the dead of the Indo-Caspians (Vedic Aryans) was definitely cremation (though other forms were known and might be practised; ritual books have no rules regarding it, except in so far as the bones of the cremated might be interred). This is elaborately stated in different ritual books of the Hindoos. (1, pp.475-479; 3, pp.617-618, 2, p.126).

Some of the orientalist with a view to supporting the connection of the Cemetery H people with the Indo-Caspians (Vedic Aryans) have deliberately translated slokas from the religious books of the Hindoos to prove that they would practice burials (16, pp.223-307; 17, pp.1-68).

It is absurd to connect the complete burials and post exposure pot burials of Cemetery H<sub>I</sub> and H<sub>II</sub> with the Indo-Caspians. Rather the complete burials of Cemetery R-37 might invoke the burial custom of the Irano-Caspians as known from their later records and from the tombs of Achaemenians (1, p.505). Again the burial customs of Cemetery H<sub>I</sub> might invoke Median influence which might be explained by assuming that the mixed Indo-Caspians assimilating the local people of Iran might bring this custom first to India.

Thus it is better to assume that this branch of the Caspians were the Irano-Caspians than to think them as the Indo-Caspians who would dominantly practise cremation.

(iii) Contemporaneity of the P.G.Ware people in the Gangetic plain and the New-comers.

During the arrival of the New-comers (1000 B.C.), we find the Indo-Caspians - the P.G.Ware people (1000 B.C.) in the Gangetic plain mainly. If we consider the New-comers as the Indo-Caspians, how we shall reconcile the literal fact that the Punjab (not the Gangetic plain) was the region where the Vedic Aryans first inhabited.

It can be reconciled by thinking that the New-comers were the Irano-Caspians who entered India at a time (ca 1000 B.C.) when the Indo-Caspians (Vedic Aryans) had just mainly migrated from the Indus Valley region to the Gangetic plain.



## (iv) The route of expansion inside India

We see a strong ethnical and cultural similarity of final phases of chalcolithic cultures of Malawa with Hissar and Sialk VI Cemetery B. But no such similarity could be traced in the Gangetic plain. Again it is probable that some branches of the New-comers reached Bihar and Bengal via Madhya Pradesh. This might indicate a strong pressure from the Gangetic plain which made the New-comers to go mainly to the South. Thus the route of expansion of the New-comers inside India mainly towards the South, does not provide us with the suggestion of connecting them with the Indo-Caspians. Rather, the route of expansion of these Caspians towards South may suggest that they were the second wave of the stock.

## (v) Route outside India

Again if we trace the route outside India traversed by these New-comers we shall find that the New-comers of Cemetery R-37 of Harappa came down from N.E.Iran to S.E.Iran; entered Baluchistan and touching Shahi Thump Jhukar and Chan-hudaro, they reached Harappa at a time when most of the Harappans changed their place of civilization from the Indus plain to any other unknown places.

The route through which the New-comers came, does not correspond with the route of the Indo-Caspians who possibly did not cross Iran but simply touched it to the North. So it is more probable that this branch of the Caspians was a group of the Irano-Caspians. Some archaeologists are eager now to fix the time of the arrival of the Indo-Caspians circa 1000 B.C. But it is highly improbable to fix the date much after 1500 B.C. from the evidence of literary records and causes detailed in those previous paragraphs.

Hence considering time and other causes aforesaid, the hypothesis of the migration of the Caspians in one wave in India becomes untenable; it is highly probable that the Caspian migrations took place in two distinct waves (excepting the later migration) in Iran and in India and these New-comers of Harappa were related with the second wave of the Caspian migration i.e. the migration of the Irano-Caspians.



Ghirshman has tried to establish that Sialk VI Cemetery B people were the Irano-Caspians and N.R. Banerjee has extended this hypothesis in the case of Indian Protohistory which states that the Aryans would know the uses of iron when they entered India. For this reason only he is willing to relate the Caspians not to Hissar but to Sialk VI Cemetery B people (57, p.127). But this hypothesis of Ghirshman can never be supported from Indian background. Culturally Sialk VI Cemetery B is related to the cairn burials of Baluchistan of comparatively recent times and ethnically the people of Sialk VI Cemetery B (brachycranials with mesocranial strain) was related with the people of the megalithic burials of Brahmagiri (47, p.23) and Jalleswaram (48, p.26, p.28).

At the present state of our knowledge, to consider these cairn burials of ca 1000 B.C. connected with the Caspians is a blunder and to hope for days when some rigid evidence will come in support of Ghirshman's hypothesis from India is simply nothing but to dream of a day-dream. As the evidence comes from Hissar, Shahi Tump, Jhukar, or Chanhudaro it is by no means logical to consider that this branch of the Caspians would use iron when they inhabited at Hissar or when they came to India.

A 77-79 cranial index people whom Kappers has identified as iron - users (11, p.154) was present, at Tepe Hissar, (Table I) Harappa (Table I) and also in the megalithic burials of Brahmagiri and Jalleswaram\* (Table II). Again we see that influx of this people (cranial index 77-79) took place more deliberately at Tepe Hissar than at Sialk. Hence to identify this 77-79 cranial index people as Iron-users is hardly to be substantiated in Iran. Rather Sialk VI Cemetery B. people, the brachycranials might be considered at least one of the iron introducers both in Iran as evidenced from Sialk VI Cemetery B and also in India as evidenced from Brahmagiri (47, p.15, p.23) and Jalleswaram (52, p.26, p.31).

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\*Unfortunately, no human skulls are obtained from the cairn burials of Baluchistan so that any comparison can be done.

Thus we see that all the prehistoric chalcolithic migrations through Baluchistan to India can primarily be attributed directly or indirectly to two broad categories. The first one - the migrations connected with Hissar; Cemetery B-37, Jhukar, Ghanhwaro II, Shahi Tump and Cemetery H might be included in this category.

These migrations were the migrations of mainly 71 cranial index people mixed with different amount of Ukrainian strain (75 cranial index) and Irano-Scythian strain (77-79 cranial index) at different sites.

And the second one - the migrations connected with Sialk VI Cemetery B; the cairn burials of Baluchistan and the megalithic burials of South India might be included in this category. These migrations were the migrations of the brachycranial people mixed with some mesocranial strain, who might have entered India with the knowledge of iron. This people was definitely other than our Caspians.

At Lothal it seems that both Tepe Hissar people (cranial index 71) and Sialk VI Cemetery B people (brachycranials) lived together (56, p. 204) and made a composite culture.

## 5. CONCLUSIONS

We can now trace two ethnic migrations of circa 1000 B.C. via Baluchistan; one - the migrations of 71 cranial index people (with a little 75 and 77-79 cranial strains) and the other; the migrations of the brachycranials (mixed with mesocranial strains). First one in the previous paragraphs has been attributed to the Irano-Caspians and the second one might be attributed to the Sialk VI Cemetery B people, the Armenoids. Groups of mixed peoples of the Irano-Caspians later on, assimilating the local peoples of Iran and Baluchistan might have also constituted the later portion of the train of the migrations of the Irano-Caspians as evidenced from Cemetery H<sub>II</sub>, Cemetery H<sub>I</sub> and Nevase. Again, from Lothal it seems that the Irano-Caspians and the Armenoids made a composite culture.



Now the question arises, who then the Indo-Caspians (Vedic Aryans) were in the Indus Valley, who came at least before 500 years of the arrival of the Irano-Caspians in the region.

To solve this problem we are to judge the different aspects of Harappa culture, its disappearance from the Indus Valley ca 1000 B.C. and its different articles with strong Hindu resemblances, precisely and deeply.

Taking into account the mature civilization as evidenced from Harappa, we can conclude that the centre of civilization of the Harappans was the Punjab and from this place they moved eastwards towards the Gangetic plain and southwards towards the Deccan; whereas, the New-comers mainly went southwards\* most probably on account of the strong pressure from the Gangetic plain. Is not the expansion of Harappan culture from the Punjab towards east and south at a time (ca 1000 B.C.) when the Indo-Caspians (Vedic Aryans) are going from the Indus Valley to the Gangetic plain at all indicative? Are the disappearance of the Harappans from the Indus plain (ca 1000 B.C.) and the appearance of the P.G. Ware people ca 1000<sup>B.C.</sup> (or little later) in the Gangetic plain really unconnected? Should the similarities of the Harappan objects with <sup>many</sup> Hindu objects of later times be simply dismissed by the hypothesis of borrowing?

There is some vague similarities between different chalcolithic West Asian cultures and the culture of the Harappans but these are nothing but the general similarities of chalcolithic cultures of Asia as a whole; there are also some vague similarities among the culture of Harappa and the first phase and also the later phases of the civilization of the Indo-Caspians in the Gangetic Valley, which might be no more than a continuation of cultural heritage through ages. But there is at least some possibility to connect the

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\*Some branches of them reached Bihar and Bengal not through U.P. but most probably through M.P.

Harappans with the Indo-Caspians and their dissimilarity might also be reconciled by assuming the culture of the latter in the Gangetic plain as the same culture being transformed from the chalcolithic age to the iron age.

At least let us speak that it will not be at least irresponsible to search facts to defend the hypothesis that the Harappans were the Indo-Caspians (Vedic Aryans); but veteran Indologists generally dismiss such hypothesis when some Hindoo orthodoxes hit the problem by their own ways.

It should be remembered that learned Indologists have done practically nothing to unveil the mystery of Harappa (except the collecting of facts). Their age old hypothesis that the Harappans were Non-Aryans and Pre-Aryans has not solved any problem but created many. We are not intended here to support the blind orthodoxy of those irresponsible orthodox theorists but only intended to judge their hypothesis properly from archaeological stand point but not from similar irresponsible dogmatic attitude.

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TABLE - I

A Tentative Racial analysis of the Populations of the Slaves, ethnically related with Tepe Hissar People

T E P E H I S S A R										Indices	Remarks
Site	Sex	Cranial									
PERIOD I	M	66.2								The mode of the Cranial indices of Tepe Hissar people is at 71. These dolichocephals are identified by Kappers as the Caspians. A negligible No. of 75 Cranial index people (Ukrainians) and 77-79 Cranial index people (Ireno-Scythians) were also present. So we can conclude that the over-whelming majority of the Caspians and a negligible small No. of the Ukrainians and the Ireno-Scythians constituted the total population of Tepe Hissar.	
	F										
	I	74.85									
	M	60.04; 68.04; 68.48; 69.27; 71.13; 71.20; 73.51; 73.85;							75.14		
PERIOD II	F	70.79; 72.25; 72.32; 74.03; 74.86; 75.28; 75.54; 75.98									
	I										
PERIOD III	M	68.29; 64.92; 65.08; 66.32; 66.34; 66.49; 66.67; 67.01; 67.03; 67.72									
		67.84; 68.06; 68.11; 68.50; 68.53; 68.53; 68.72; 68.75; 68.78; 68.95									
		69.11; 69.15; 69.23; 69.23; 69.40; 69.47; 69.52; 69.59; 69.68									
		69.73; 69.85; 69.90; 69.95; 69.95; 70.05; 70.16; 70.21; 70.31; 70.47									
		70.49; 70.53; 70.62; 60.65; 70.68; 70.79; 70.81; 70.92; 70.92									
		70.92; 70.97; 71.13; 71.27; 71.50; 71.58; 70.67; 71.66; 71.67; 71.74									
		71.81; 71.81; 71.88; 71.88; 71.96; 71.96; 72.13; 72.16; 72.19; 72.25									
		72.34; 72.43; 72.43; 72.73; 72.73; 72.97; 73.16; 73.26; 73.26									
		73.30; 73.48; 73.51; 74.51; 73.60; 73.63; 73.68; 73.89; 73.89									
		74.21; 74.30; 74.35; 74.59; 74.71; 74.74; 75.15; 75.15; 75.13; 75.68									
	75.72; 76.22; 76.24; 76.84; 77.05; 77.78; 78.33; 80.90										

cont'd ....

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TABLE -I (Contd.)

Site	Sex	Cranial	Indices	Remarks
TEPEHISSAR	F	68.82; 69.35; 70.06; 70.53; 70.72; 71.12; 71.43; 71.58; 71.66; 71.82 72.07; 72.07; 72.32; 72.32; 72.41; 72.47; 72.53; 72.67; 72.75; 73.03 73.08; 73.26; 73.51; 73.74; 74.03; 74.48; 74.57; 75.28; 75.31; 75.82 76.38; 76.92; 77.90; 77.91; 78.57; 79.43; 81; 85.62		
	I	69.43; 69.73; 70 ; 71.59; 72.41; 73.26; 73.41; 73.71; 73.84; 74.32 74.86; 75.42; 75.74; 75.88; 76.02; 76.05; 77.98		
Nal	M	70.02		The Caspian
Shahi Dump	M	Dolichocephalic		The Caspian
Chanhudaro	F	71.07		The Caspian
Mohenjodaro	M	63.32; 68.37; 68.72 ?; 71.16; 71.71; 72.73; 73.43; 76.73 ?		
	F	57.45 ? ; 69.45 ?; 70.08		The Caspian
	I	85.37		
Harappa Cemetery R-37	M	68.06; 68.81; 69.15; 69.31; 69.63 ?; 70.43; 71.44 ?; 71.81; 72.19 72.83; 74.47; 75.90; 79.79		The case is here to a greater extent similar to Tepe Hissar. A majority of the Caspians with relatively small number of the Iranian and the Irano-Scythians constituted the population of the graves.
	F	66.30; 68.68 ?; 70.73; 71.27; 71.28; 71.47; 72.13; 72.47; 75.69 77.84; 80.70		
	I	77.11		

TABLE I (Contd.)

Site	Sex	Cranial	Indices	Remarks
Harappa Cemetery H (Open burial)	M	75.13; 75.75; 79.27 ?		The case is here different from that of Tepe Hissar. The majority of the population might be assumed as the Ukrainians with relatively small number of the Irano-Scythians and the Caspians.
	F	71.93 ?; 80.24		
Harappa Cemetery H (Jar burial)	M	68.18; 73.39 ?; 76.63 ?		An intimate mixture of the Caspians, the Ukrainians and the Irano-Scythians.
	F	72.47 ? 72.73; 74.18; 74.72; 75.72; 75.73; 76.88; 84.00		
	I	70.66		
Harappa Mound AB	M	73.08		The Caspians.
	F	69.83; 69.95 ?		
Harappa Area G	I	76.51		The Caspians and the Irano-Scythians
	M	71.62; 72.47; 72.77; 78.41; 79.12; 79.33; 81.29		
	F	71.84; 77.11		
	I	66.87; 75.90; 80.63		
Nevasa	M	67.2		The Caspians and the Ukrainians
	F	72.4; 75.8		



TABLE - II

A Tentative Racial Analysis of the populations of the Sites-ethnically related  
with Stalk VI Cemetery B People

Site	Period	Sex	Cranial	Indices	Remarks
S I A L K	Stalk I	M	69.3 ?; 69.3 ?; 74.79		The Armenoids are highly prominent in the Stalk VI Cemetery B
		F	68.4 ?; 70.3 ?; 79 ?		
	Stalk II	M	65 ?; 65.3 ?		
		F	74.1 ?; 74.2 ?; 82 ?		
	Stalk III	M	69.1		
		F	68.2		
		I	73.7; 76; 83.3		
	Stalk IV	F	82.1		
		I	84.4 ?		
	Stalk V	M	79.2 ?		
Jalles Waram		F	73.1		The Armenoids are also traceable in the site
	Stalk VI	M	73.9; 75.7; 80; 81.2; 81.8; 83.3; 84.2; 87.4; 86.1; 92.8 ?		
		F	73.3; 74.4; 83.2; 86.9; 88.8; 89.6 ? 92.9		
	Megalith	M	78.21; 79.13; 80.75 ?; 83.52		
		F	64.22 ?		
		Unden-71.22 ? *	(Not from megalithic burial)		
		Unidentified			
		I	68.87; 69.27 *	(Not from megalithic burial)	
		M	80.57; 81.73 ?; 89.09 ?		
	Megalith	F	74; 76.92		

The Armenoids are also traceable in the site

A Tentative Chronological Scheme

Ca 1500 B.C. or a little  
earlier, probably  
Ca 1800 B.C.

- (i) Arrival of the Indo-Caspians in India; (ii) beginning of Harappan Culture

Ca 1000 B.C.

- (i) Disappearance of the Harappans from the Indus Valley; (ii) appearance of the Indo-Caspians mainly in the Gangetic plain; (iii) arrival of the Irano-Caspians (New-comers) in the Indus Valley.

Ca 800 B.C.

- (i) Arrival of different branches of the mixed Irano-Caspians in India; (ii) arrival of the Armenoids (the brachycranials) in India.

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WEIGHTS AND MEASUREMENTS OF HARAPPA  
CULTURE IN TERMS OF RAKTIKĀ AND ANGULA

In the following paragraphs and tables I am intending to relate Harappan weights with the ancient Indian weights of Gold, Silver and Copper. According to Mr. A. S. Hammy there were two systems of weights<sup>1</sup> used by the people of Harappa culture.

First one (in gms.) :- .856; 1.71; 2.28; 3.42; 6.85; 13.12; 27.39; 54.78; 136.96; 171.2; 273.92; 1370.

and the second one<sup>2</sup> described by Mr. Hammy as exceptional weights at Mohenjodaro (in gms.) :- .98; 2.07; 3.03; 3.92; 24.5; 47.30.

From vivid observations (without making  $\frac{1}{2}$  test) of the tables of weights found from Harappa and Mohenjodaro, it will be at one obvious that the second system or the exceptional system is not exceptional at all; this system is originated, rather created with a view to showing an approximate similarity of some of the weights of Harappa Culture with Babylonian system by an "As you like" type explanation. The exceptional system can easily be reasonated with the first system i.e. the exceptional weight .98 gm. may be taken as one defective specimen of the normal system of the weight-standard of .850 gm.

Similarly,

2.07 gms.	may be taken for one defective specimen of 2.15 gms.
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3.03 gms. and 3.92 gms.	may be taken for two defective specimens of 3.44 gms.
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24.50 gms.	may be taken for one defective specimen :" of 27.53 gms.
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47.30 gms.	And may be taken for one defective specimen of 55.07 gms.
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It is more logical to assume that the last two weights i.e. 24.56 gms. and 47.30 gms. are the defective specimens of the normal weights 27.36 gms. and 52.8 gms. respectively than to think that those above mentioned weights are different system of weights used in HM\* and they possess approximate resemblance with light Babylonian System. The exceptional system of Mr. Hemmy is a wishful selection of few defective weights among large number of Harappan weights placing one eye to the table of light Babylonian system. Still in the table "Approximation of the Indus valley weights to Babylonian system"<sup>3</sup> Mr. A. S. Hemmy will certainly deliver you some fun to find out the approximate similarity and make you think what Marshallians did to point out the imaginary resemblance of Harappa Culture with the civilization of Sumer and Assyria. This type of dogmatic attitude of explaining Harappa materials either to be Assyrian or to be sumerian by hook or by crook is a well known tradition of the Marshallians.

To prepare the tables "Excavations at Harappa" by M. S. Vats (Vol. II, pp. 365 - 365) and "Mohenjodaro and the Indus civilization" by Marshall (Vol. II Marshall pp. 589 - 598. Appendix II - List of Weights from Harappa) are consulted. When the same specimen of weights are tabulated in the reports with different weights, I have taken the results of the former. For the weights of Mohenjodaro, the same process described above is adopted. The description of weights are taken from "Mohenjodaro and the Indus civilization". Only perfect and slightly chipped weights of both the sites are taken into considerations. The weights which lack the descriptions of their condition are treated as perfect.

\*HM :- HM means Harappa and Mohenjodaro together.

According to Manu Indian system of weighing silver, gold and copper are given below<sup>4</sup>.

### S i l v e r

2 Raktikās	= 1 Māsha	.21510 gms.*
16 Māshas	= 1 Purāṇa	3.4417 gms.
10 Purāṇas	= 1 Śatamāṇa	34.417 gms.

### Gold and Copper

5 Raktikās	= 1 Māsha	.53775 gms.
16 Māshas	= 1 Suvarṇa; Ārshāṇa (only for Copper)	8.604 gms.
4 Suvarṇas	= 1 Pala	34.417 gms.
10 Palas	= 1 Dharṇa	344.17 gms.

We see here that the Śatamāṇa (320 raktikās) in the Silver system has the same weight as the Pala (320 raktikās) in the Gold system. In the Gold and Copper systems, there is a higher unit, gold Dharṇa which is 10 times of a Pala and this unit is absent in the Silver system. From the tables I and II we may consider that for weightment of common articles, Harappan people would use Silver system. The general system of weightment of common articles of Harappan people, may be thought to have been based on the following system.

2 Raktikās	= 1 Raupya Māshaka	.21510 gms.
16 Raupya Māshakas	= Purāṇa (Silver)	3.4417 gms.
10 Purāṇas (Silver)	= 1 Śatamāṇa (Silver)	34.417 gms.
10 Satamanas (Silver) <sup>5</sup>	= 1 Suvarṇa Dharṇa	344.17 gms.

Harappan weights can easily be explained in terms of above unit weights of ancient India and the explanation is so clear that one is forced to infer that the weighing units of Harappa Culture were exactly the same as the prescribed weighing units of Manu (See Table I and II)

\*For various reasons I have taken 1 raktikā = .10755 gms.



Mr. H. D. Sankhli<sup>6</sup> thinks that the weight system of Nevasa, especially with regard to the ratios possessed closer resemblance with light Babylonian system than with the Harappan system.

But I think that the people of Nevasa used the same system of weighment (See Table III) as the people of Harappa, Mohenjodaro and Chanhudaro did.

From the following table, it will be apparent that Nevasa - people used cruder weights and so we may infer that Nevasa people were lesser advanced than the Harappan people in connection with the uses of weights.

The weights obtained from Chanhudaro<sup>7</sup> (See Table II) and the Betwa site Taxila<sup>8</sup> (See table IV) also show unmistakable resemblance with the weights of Harappa and Mohenjodaro.

### MEASUREMENT

Relation between the Harappan scale and the system of measurement of ancient India may be traced, by observation and comparison. But this method of observation and comparison of the Indus scales with ancient Indian scales will give us no conclusive result. The weight system of ancient Hindoo India was unique, and as far as we know no peoples other than the Harappans used such system of weighment; and so definite conclusion can be drawn from the analysis.

But for measurement, the cubit system, was customary in many parts of ancient world e.g., Egypt, Asia Minor, Greece, Lachish, Syria etc.<sup>9</sup> It can be shown that like the people of ancient Hindoo India (also like other ancient peoples) the Harappan people used cubit system of measurement.

Indian systems of measurement are given

below as known from ancient literatures<sup>10</sup>. (Vridhha Manu).

8 Yavas	= 1 Angula
12 Angulas	= 1 Vitasti
2 Vitasti	= 1 Hasta or cubit



and

$$* 6 \text{ Yavas}^{11} = 1 \text{ Āṅgula}$$

$$24 \text{ Āṅgulas} = 1 \text{ Hasta.}$$

Whatever be the measure of 1 Yava, it is obvious that the length of 1 Āṅgula was fixed. 1 Hasta of Indian scale varies from 18" - 19". So the length of 1 Āṅgula will vary from .75" to .79125". One Yava, then, (if 6 Yavas = 1 Āṅgula be customary one) will vary from .125" to .1318" and 2 Yavas will vary from .250" to .26275".

One <sup>12</sup> of the two scales of Harappan culture (found at Mohenjodaro) could easily be explained in the light of ancient Hindoo - scale. (See Table V).

Again the second scale <sup>13</sup> found at Harappa tallies well with the Indian system -: (See Table VI).

$$8 \text{ Yavas} = 1 \text{ Āṅgula}$$

$$24 \text{ Āṅgulas} = 1 \text{ Hasta (18")}$$

$$\text{Hence } 1 \text{ Yava} = .09375 \text{ inch.}$$

$$\frac{1}{2} \text{ Āṅgula} = 4 \text{ Yavas} = .37500 \text{ inch.}$$

From the nature of the weights and measurement of Harappa culture and ancient Indian coins and scales, i.e. their basic unit the system of change of basic unit to higher units, I can not but think that the system of weights and measurement of HM and ancient Hindoo India was the one and the same (especially with regard to weights) and the conclusion which comes from the picture is rather shocking and I am afraid of stating that such strong similarity can hardly be explained by the borrowing theory. One reasonable explanation which can never be excluded is that, both the peoples are the one and the same and hence, the weights of Harappa Culture were not so old as the Marshallians think.

In all the tables H means Harappa, H Mohenjodaro, HM Harappa and Mohenjodaro together, C Chanhudaro and T Taxila; d means at least some of the specimens of the Group are defective.

# TABLE I

A survey of the weights from Harappa and Mohenjodaro

Group	Size of specimens	Range (in grams)	Average weight (in gram)	Relevant Indian weight	Theoretical weight of the relevant Indian weight (in gram)	Relevant average weight from other Indian sites (in gram)
MAN 1	M 1		.550	1 māsha (Gold)	1 māsha (Gold) = 5 rakṭikās = .10755 gm x 5 = .53775 gm	C - .58
MAE 4	H 1 M 6		.950 .887	4 māshas (Silver)	1 māsha (Silver) = 2 rakṭikās = .10755 x 2 gm = .21510 gm 4 māshas (Silver) = .21510 x 4 gm = .8604 gm	C - .8861
MAE 8	H 13 M 13	1.160-1.820 1.552-1.891	1.620 1.758	8 māshas (Silver)	8 māshas = .21510 gm x 8 = 1.7208 gm	C - 1.82
MAN 4	H 4	2.6 - 2.9	2.86	4 māshas (Gold)	4 māshas (Gold) = .53775 gm x 4 = 2.151 gm	C - 2.46

TABLE-1 (contd.)

A survey of the weights from Harappa and Mohenjodaro

Group	Site	No. of specimens	Range (in grams)	Average weight (in gram)	Relevant Indian weight	Theoretical weight of the relevant Indian weight (in gram)	Relevant average weight from other Indian sites (in gram)
PAG 1	HM	52	3,030-3,950	3,450	16 Mashas (Silver) = 1 Purāṇas (Silver)	1 Purāṇas (Silver) = 3,447 gms.	C - 3.82
PAG 2	HM	68	6,310-7,310	6,805	2 Purāṇas (Silver)	2 Purāṇas (Silver) = 3,447 gms. x 2 = 6,8834 gms.	C - 6.78 N - 6.78 T - 7.06
PAG 4	BM	68	13,080-15,000	13,760	4 Purāṇas (Silver)	4 Purāṇas (Silver) = 3,447 gms. x 4 = 13,7668 gms.	C - 13.82 N - 15.4 T - 13.25
PAG 8	N	64	25,354-29,225	27,385	8 Purāṇas (Silver)	8 Purāṇas = 3,447 gms. x 8 = 27,5336 gms.	C = 27.92
	H	60	25,050-29,500	27,057			T = 27.10
SAG 1	H	4	36,79 - 39,40	37.21	10 Purāṇas (Silver) 1 Satamaṇas (Silver)	= 1 Satamaṇas = 34,417 gms.	C - 32.74 N - 34.89 T - 35.96



TABLE - I (Contd.)

A survey of the weights from Harappa and Mohenjodaro

Group	Site	No. of specimens	Range (in grams)	Average weight (in gram)	Relevant Indian weight	Theoretical weight of the relevant Indian weight (in gram)	Relevant average weight from other Indian sites (in gram)
PAE 16	H	16	49.750-56.000	53.521	16 Purāṇas (Silver)	16 Purāṇas (Silver) = 3.4417 grms x 16 = 55.0672 grms	C - 53.33 H - 54.82
	M	10	53.810-54.496	54.441			T - 53.45
SAC 2	H	2	61.300-67.500	64.4	2 Śatamāṇas (Silver)	2 Śatamāṇas (Silver) = 34.417 grms x 2 = 68.834 grms	C - 65.27 H - 59.1 T - 69.67
36							
SU ANLO	H	3	80.7 - 89.7	85.53	10 Suvarṇas (Gold)	10 Suvarṇas (Gold) = 8.604 grms x 10 = 86.04 grms	
SAC 3	M	1		96.476	3 Śatamāṇas (Silver)	3 Śatamāṇas (Silver) = 34.417 grms x 3 = 103.251 grms	N - 105.32
	H	19	121.4-135.3	130.65	4 Śatamāṇas (Silver)	4 Śatamāṇas (Silver) = 34.417 grms x 4 = 137.68 grms	C - 131.15 N - 126.3
SAC 4	M	6	136.6-137.81	135.67			

TABLE - I (contd.)

A survey of the weights of Harappa and Mohenjodaro

Group	Site	No of specimens	Range (in grams)	Average weight (in grams)	Relevant Indian weight	Theoretical weight of the relevant Indian weight (in grams)	Relevant average weight from other Indian sites (in grams)
Śāg 5	H	3	151.424-185.500	170.308	5 Śatamāṇas (Silver)	5 Śatamāṇas = 34.417 gms x 5 = 172.085 gms	
Śāg 8	H	1		263.5	8 Śatamāṇas (Silver)	8 Śatamāṇas = 34.417 gms x 8 = 275.336 gms	C - 267.06 N - 284.3
	M	3	270.70-275.20	273.61			
Śāg 16	H	1		546.7	16 Śatamāṇas (Silver)	16 Śatamāṇas (Silver) = 34.417 gms x 16 = 550.672 gms	C - 544.77
Śāg 40 or Dhau 4	H	1		1375	40 Śatamāṇas (Silver)	40 Śatamāṇas (Silver) = 34.417 gms x 40 = 1376.68 gms	
	M	3	1375-1445.85	1414.18	4 Dharaṇas (Gold)	4 Dharaṇas (Gold) = 344.17 gms x 4 = 1376.68 gms	
Śāg 80 or Dhau 8	H	24	2652.8-2703.9	2678.37	80 Śatamāṇas (Silver)	80 Śatamāṇas (Silver) = 34.417 gms x 80 = 2753.36 gms	
	M	24	2735.78-2576.30	2656.05	8 Dharaṇas (Gold)	8 Dharaṇas (Gold) = 344.17 gms x 8 = 2753.36 gms	
Śāg 320 or Dhau 32	M	14		11467.58	320 Śatamāṇas (Silver) or 32 Dharaṇas (Gold)	320 Śatamāṇas (Silver) = 34.417 gms x 320 = 11013.44 gms	

TABLE - II

A survey of the weights from Chennudaro

Group	No. of specimens	Range (in gram)	Average weight (in gram)	Relevant Indian weight	Theoretical weight of the relevant Indian weight (in gram)	Relevant average weight from other Indian sites (in gram)
MAU 1	2	.5695-.5935	.58	1 Māsha (Gold)	1 Māsha (Gold) = 5 rakṭikas = .10755 gm x 5 = .53775 gm.	M - .65
MAE 4	1 <sup>d</sup>		.8861	4 Māshas (Silver)	1 Māsha (Silver) = 2 rakṭikas = .10755 gm x 2 = .21510 gm. 4 Māshas (Silver) = .21510 gm x 4 = .8604 gm	H - .950 M - .887
MAE 8	3 <sup>d</sup>	1.630-1.9335	1.820	8 Māshas (Silver)	8 Māshas (Silver) = .21510 gm x 4 = 1.7208 gm	H - 1.62 M - 1.76
MAU 4	3 <sup>d</sup>	2.063-2.961	2.46	4 Māshas (Gold)	4 Māsha (Gold) = .5377 gm x 4 = 2.1510 gm	H - 2.66
PAE 1	13 <sup>d</sup>	3.3285-4.841	3.82	1 Purāṇa (Silver)	1 Purāṇa (Silver) = 3.4417 gms	HM - 3.45 M - 3.37
PAE 2	17 <sup>d</sup>	5.471-7.457	6.78	2 Purāṇas (Silver)	2 Purāṇas (Silver) = 3.4417 gms x 2 = 6.8834 gms	HM - 6.805 M - 6.78 L - 7.06



TABLE - II

(contd.)

A survey of the weights from Chanudaro

Group	No of specimens	Range (in gms)	Average weight (in gram)	Relevant Indian weight	Theoretical weight of the relevant Indian weight (in gram)	Relevant average weight from other Indian sites (in gram)
PAG 3	4d	8.520-10.65	9.30	3 Purāṇas (Silver)	3 Purāṇas (Silver) = 3.4417 gms x 3 = 10.3251 gms	N - 8.24
PAG 4	16	13.40-14.90	13.82	4 Purāṇas (Silver)	4 Purāṇas (Silver) = 3.4417 gms x 4 = 13.7668	M - 13.76 N - 15.4 T - 13.25
PAG 6	7d	18.10-23.70	20.97	6 Purāṇas (Silver)	6 Purāṇas (Silver) = 3.4417 gms x 6 = 20.6502 gms	
PAG 8	21d	26.68-30.39	27.92	8 Purāṇas (Silver)	8 Purāṇas (Silver) = 3.4417 gms x 8 = 27.5336 gms	M - 27.385 H - 27.057 T - 27.10
PAG 1	2d	32.38-33.10	32.74	1 Śatamaṇas (Silver)	1 Śatamaṇas (Silver) = 10 Purāṇas (Silver) = 34.417 gms	H - 37.21 H - 34.89 T - 35.96

T A B L E - II (contd.)

A survey of the weights from Chandraro

Group	No of specimens	Range (in Gram)	Average weight (in Gram)	Relevant Indian weight	Theoretical weight of the relevant Indian weight (in gram)	Relevant average weight from other Indian sites (in gram)
PAE 13	2 <sup>d</sup>	42.88-45.55	44.22	13 Purāṇas (Silver)	13 Purāṇas (Silver) = 3.4417 gms x 13 = 44.7421 gms	T - 43.44
PAE 16	11 <sup>d</sup>	49.68-57.17	53.32	16 Purāṇas (Silver)	16 Purāṇas (Silver) = 3.4417 gms x 16 = 55.0672 gms	H - 53.52 M - 54.44 N - 54.82 T - 53.45
ŚĀE 2	2 <sup>d</sup>	60.93-69.61	65.27	2 Śatamāṇas (Silver)	2 Śatamāṇas (Silver) = 34.417 gms x 2 = 68.834 gms.	H - 64.4 M - 69.1 T - 69.67
ŚĀE 4	8 <sup>d</sup>	120.88-136.65	131.45	4 Śatamāṇas (Silver)	4 Śatamāṇas (Silver) = 34.417 gms x 4 = 137.668 gms.	H - 130.65 M - 135.97 N - 126.3

TABLE - II (contd.)

A survey of the weights from Chandudero

Group	No of specimens	Range (in gms)	Average weight (in gram)	Relevant Indian weight	Theoretical weight of the relevant Indian Weight (in gram)	Relevant average weight from other Indian sites (in gram)
SAE 5	1 <sup>d</sup>		185.04	5 Śatamāṇas (Silver)	5 Śatamāṇas (Silver) = 34,417 gms x 5 = 172,085 gms	
SAE 8	2 <sup>d</sup>	260.52-273.59	267.06	8 Śatamāṇas (Silver)	8 Śatamāṇas (Silver) = 34,417 gms x 8 = 275,336 gms	H - 263.5 M - 273.61 N - 284.3
SAE 12	1 <sup>d</sup>		392.76	12 Śatamāṇas (Silver)	12 Śatamāṇas (Silver) = 34,417 gms x 12 = 413,024 gms	T - 399.61
SAE 16	1		544.77	16 Śatamāṇas (Silver)	16 Śatamāṇas (Silver) = 16 x 34,417 gms = 550,672 gms	H - 546.7
SAE 39	1 <sup>d</sup>		1330.68	39 Śatamāṇas (Silver)	39 Śatamāṇas (Silver) = 34,417 gms x 39 = 1342,263 gms.	



TABLE - III

A survey of the weights from Nevasa

Serial No. of the group as tabulated by Sankalpa	Group	No of specimens	Average weight (in gram)	Relevant Indian weight	Theoretical weight of the relevant Indian weight (in gram)	Relevant average weight from other Indian sites (in gram)
17	MAU 8	3	4.6	8 māshas (Gold)	1 māsha (Gold) = 5 rakṭikas = $10755 \text{ gm} \times 5$ = $53775 \text{ gm}$ 8 māshas (Gold) = $53775 \text{ gm} \times 8$ = $4.302 \text{ gms}$	
16	PAG 2	4	6.78	2 Purāṇas (Silver)	2 Purāṇas (Silver) = $8.4417 \text{ gms} \times 2$ = $6.8834 \text{ gms}$ .	HM - 6.805 C - 6.78 T - 7.06
15	PAG 3	7	9.24	3 Purāṇas (Silver)	3 Purāṇas (Silver) = $3.4417 \text{ gms} \times 3$ = $10.3251 \text{ gms}$	C - 8.30
14	PAG 4	5	15.4	4 Purāṇas (Silver)	4 Purāṇas (Silver) = $3.4417 \text{ gms} \times 4$ = $13.7668 \text{ gms}$	HM - 13.76 C - 13.82 T - 13.25

T A B L E - III (Contd.)

A survey of the weights from Nevase

Serial No. of the group as tabulated by Sankala	Group	No. of specimens	Average weight (in gram)	Relevant Indian weight	Theoretical weight of the relevant Indian weight (in gram)	Relevant average weight from other Indian sites (in gram)
13	PAS 7	2	22.16	7 Purāṇas (Silver)	7 Purāṇas (Silver) = 3.4417 gms x 7 = 24.0918 gms	
12	SAS 1	6	34.89	1 Śatamāṇa (Silver)	1 Śatamāṇa (Silver) = 10 Purāṇas (Silver) = 34.417 gms	H - 37.21 C - 32.74 T - 35.96
11	PAS 16	3	54.82	16 Purāṇas (Silver)	16 Purāṇas (Silver) = 3.4417 gms x 16 = 55.0672 gms	H - 53.52 M - 54.44 C - 53.33 T - 53.45
10	SAS 2	4	69.1	2 Śatamāṇas (Silver)	2 Śatamāṇas (Silver) = 34.417 gms x 2 = 68.834 gms	H - 64.4 C - 65.27 T - 69.67

TABLE - III (Contd.)

A survey of the weight from Nevase

Serial No. of the group as tabulated by Sankalia	Group	No of specimens	Average weight (in gram)	Relevant Indian weight	Theoretical weight of the relevant Indian weight (in gram)	Relevant average weight from other Indian sites (in gram)
9	Śāg 3	5	105.32	3 Śātamāṇas (Silver)	3 Śātamāṇas (Silver) = 34,417 gms x 3 = 103,251 gms	M - 96,476
8	Śāg 3	2	110.11	3 Śātamāṇas (Silver)	3 Śātamāṇas (Silver) = 34,417 gms x 3 = 103,251 gms	M - 96,476
7	Śāg 4	2	126.3	4 Śātamāṇas (Silver)	4 Śātamāṇas (Silver) = 34,417 gms x 4 = 137,668 gms	H - 130.65 M - 135.97 C - 126.3
6	Śāg 6	3	198.8	6 Śātamāṇas (Silver)	6 Śātamāṇas (Silver) = 34,417 gms x 6 = 206,502 gms	
5	Śāg 8	2	281.3	8 Śātamāṇas (Silver)	8 Śātamāṇas (Silver) = 34,417 gms x 8 = 275,336 gms	H - 263.5 M - 273.61 C - 267.06



T A B L E - III (Contd.)

A survey of the weights from Nevasa

Serial No. of the group as tabulated by Sankala	Group	No. of specimens	Average weight (in gram)	Relevant Indian weight	Theoretical weight of the relevant Indian weight (in gram)	Relevant average weight from other Indian sites (in gram)
4	Śaṅ 9	2	314.3	9 Śatamāṇas (Silver)	9 Śatamāṇas (Silver) = 34.417 gms x 9 = 309.753 gms	
3	Śaṅ 10 or Dhau 1	2	346.3	10 Śatamāṇas (Silver) or 1 Dharaṇa (Gold)	10 Śatamāṇas (Silver) = 34.417 gms x 10 = 344.17 gms or 1 Dharaṇa (Gold) = 10 Palas (Gold) = 34.417 gms x 10 = 344.17 gms	
2	Śaṅ 14	2	488.07	14 Śatamāṇas (Silver)	14 Śatamāṇas (Silver) = 34.417 gms x 14 = 481.838 gms.	
1	Śaṅ 20 or Dhau 2	1	678.3	20 Śatamāṇas (Silver) or 2 Dharaṇas (Gold)	20 Śatamāṇas (Silver) = 34.417 gms x 20 = 688.34 gms 2 Dharaṇas (Gold) = 344.17 gms x 2 = 688.34 gms	

TABLE - IV

A survey of the weights from Taxila

Group	No. of specimens	Range (in gram)	Average weight (in gram and in gm)	Relevant Indian weight	Theoretical weight of the relevant Indian weight (in gram)	Relevant average weight from other site (in gram)
MAE 6	1d		19.96 grains = 1.26 gms	6 Māshas (Silver) = 12 rakkās	6 Māshas (Silver) = 21510 gm x 6 = 1,29060 gms	
P.A.E. 1	2d	51.5-52.38	51.94 grains = 3.37 gms	1 Purāṇas (Silver)	1 Purāṇas (Silver) = 3,4417 gms	HM - 3.45 C - 3.82
P.A.E. 2	1		109 grains = 7.06 grams	2 Purāṇas (Silver)	2 Purāṇas (Silver) = 3,4417 gms x 2 = 6,8834 gms	HM - 6.805 C - 6.78 M - 6.78
P.A.E. 4	5d	195-210	203.4 grains = 13.25 gms	4 Purāṇas (Silver)	4 Purāṇas (Silver) = 3,4417 gms x 4 = 13,7668 gms	HM - 13.76 C - 13.82 M - 15.4

TABLE - IV (Contd.)

A survey of the weights from Taxila

Group	No of specimens	Range (in grains)	Average weight (in grains and in gram)	Relevant Indian weight	Theoretical weight of the relevant Indian weight (in gram)	Relevant average weight from other site (in gram)
PAGE	5	408-430	418.2 grains = 27.10 gms	8 Purāṇas (Silver)	8 Purāṇas (Silver) = 3.4417 gms x 8 = 27.5336 gms	H - 27.385 H - 27.057 C - 27.920
Sl. 1	1		555 grains = 35.96 gms	10 Purāṇas (Silver) = 1 Satamaṇa (Silver)	1 Satamaṇa (Silver) = 34.417 gms	H - 37.21 C - 32.74 N - 34.89
PAGE 13	2	669-671.5	670.3 grains = 43.44 gms	18 Purāṇas (Silver)	13 Purāṇas (Silver) = 3.4417 gms x 13 = 44.7421 gms	C - 44.22
PAGE 16	54	803-844	824.8 grains = 53.45 gms	16 Purāṇas (Silver)	16 Purāṇas (Silver) = 3.4417 gms x 16 = 55.0672 gms	H - 53.52 M - 54.44 C - 53.33 N - 54.82



TABLE - IV (Contd.)  
A survey of the weights from Taxila

Group	No of specimens	Range (in grains)	Average weight (in grains and in gram)	Relevant Indian weight	Theoretical weight of the relevant Indian weight (in gram)	Relevant average weight from other Indian sites (in gram)
SAE 2	1		1075 grains = 69.67 gms	20 Purāṇas (Silver) = 2 Satamāṇas (Silver)	2 Satamāṇas (Silver) = 34.417 gms x 2 = 68.834 gms	H - 64.4 Q - 65.27 N - 69.1
SAE 3	4 <sup>d</sup>	1669-1686	1678 grains = 108.75 gms	3 Satamāṇas (Silver)	3 Satamāṇas (Silver) = 34.417 gms x 3 = 103.251 gms	
SAE 6	7 <sup>d</sup>	2927-3362	3132.4 grains = 203.01 gms	6 Satamāṇas (Silver)	6 Satamāṇas (Silver) = 34.417 gms x 6 = 206.502 gms	
SAE 12	11 <sup>d</sup>	5480-6486	6166 grains = 398.61 gms	12 Satamāṇas (Silver)	12 Satamāṇas (Silver) = 34.417 gms x 12 = 413.004 gms	C - 392.76

TABLE - IV (Contd.)  
A survey of the weights from Taxila

Group	No. of specimens	Range (in grains)	Average weight (in grains and in gm)	Relevant Indian weight	Theoretical weight of the relevant Indian weight (in gram)	Relevant average weight from other Indian site (in gram)
ŚAś 15	3d	7896-8306	8060 grains = 522.35 gms	15 Śatamaṇas (Silver)	15 Śatamaṇas (Silver) = 34.417 gms x 15 = 516.255 gms	
ŚAś 18	1d	9304	9304 grains = 602.98 gms	18 Śatamaṇas (Silver)	18 Śatamaṇas (Silver) = 34.417 gms x 18 = 619.506	

TABLE - V

Comparison of a Mohenjodaro scale with ancient Indian scale

No. of Markings	Mohenjodaro scale Length from the origin (in inch.)	Relevant Indian Scale	Remarks
1	.264	2 Yavas	<p>Considering 6 Yavas = 1 Angula and 24 Angulas = 1 Hasta = 19" We have 2 Yavas = <math>\frac{19 \times 2}{24 \times 6}</math> inch = .264 inch. and 1 Angula = .264 inch <math>\times 3</math> = .792 inch.</p>
2	.528	4 Yavas	
3	.792	6 Yavas = 1 Angula	
4	1.056	8 Yavas = 1 Angula 2 Yavas	
5	1.320	10 Yavas = 1 Angula 4 Yavas	
6	1.584	12 Yavas = 2 Angulas	
7	1.848	14 Yavas = 2 Angulas 2 Yavas	
8	2.112	16 Yavas = 2 Angulas 4 Yavas	
9	2.375	3 Angulas	



## SECOND SCALE

SECOND SCALE					
Harappan scale		Relevant Indian scale	Exact length of Indian scale (in inch.)	Remarks	
No. of Markings	Length from the origin (in inch.)				
1	.3780	4 Yavas	.375	Considering 8 Yavas = 1 Angula and 24 Angula = 1 Hast = 18" We have 4 Yavas = .375" and 1 Angula = .75 inch.	
2	.7343	8 Yavas = 1 Angula	.75		
3	1.1063	1 Angula 4 Yavas	1.125		
4	1.4705	2 Angulas	1.500		

TABLE - VI

Comparison of a Harappan scale with ancient Indian scale

REFERENCE

1. Mohenjodaro and the Indus civilization Vol.II. Systems of weights at Mohen-jodaro, p.590.
2. Mohenjodaro and the Indus civilization Vol.II. Systems of weights at Mohenjodaro, Hemmy, p.591.
3. Ibid, p.594
4. 1) Graves C.H. Manava-Dharma-Śāstra  
Vol.I (for Sanskrit Text) Chapter Eighth-Slokas  
- 134 - 137.

सर्षपाः षडयवो मध्यस्त्रियवन्नेव कृष्णालम् ।  
 पंचकृष्णालको माषस्ते सुवर्णशुषौडश ॥  
 पलं सुवर्णीयमत्रातः पलानि धरणद्वयम् ।  
 द्यूकृष्णले समधृते विज्ञेयौ रौप्यमाषकः ॥  
 तेषौडशस्याद्वयं मुद्राण्यैव राजतः ।  
 काषीपणस्तु विज्ञेयस्त्राभ्रिकः काषिकः पञ्चाः ॥  
 धरणानि दश ज्ञेयः शतमानस्तु राजतः ।  
 चतुः सौवर्णिकौ निष्को विज्ञेयस्तु प्रमाणतः ॥

ii) Asiatic Researches .. Vol.V

"On Indian Weights and Measures"

iii) Numismata Orientalia - E Thomas

p.13, Table III

iv) Antiquities of India - Barnett, p.206.

5. This is taken from the Gold Standard to explain the heavy weights of Mohenjodaro and Harappa. If the modification be avoided, these heavy weights can also be explained in terms of Satamāṇas.
6. From history to pre-history at Navasa Sankalia H.D.  
Deo. Ansari, Ehrhardt, p.477.
7. Mohenjodaro Excavations, Mackay, p.237.
8. Taxila Vol.II - Marshall, pp.503-512.
9. Excavations at Harappa M.S.Vats, p.365.
10. i) Asiatic Researches, Vol. V.  
On Indian weights and Measures. Colebrooke, p.103.



- 11) अङ्गुलः - "अथ यव-परिमाणम्, त्रैत्ययव-  
- दीर्घमात्रं वाचस्पतिः।" cited from खण्डव्याख्याः।"  
111) अङ्गुल - "यदेवाहरेण अङ्गुलमात्रेण सहस्रम्।"

iv) Yava - "A measure of length equal to  $1/6$  or  $1/8$  of an angula" The Student's Sanskrit Eng. Dictionary, V.S. Apte p.466.

11. Excepting the reference of Apte I have been unable to find out this relation in any standard literature. Yet I have considered this equivalence on account of the fact that one Indus Scale fits well with this description.

A Jain Ganita refers - : 4 Yavas = 1 angula;  
4 Angulas = 1 Mushti; 4 mushtis : = 1 hasta.  
(Antiquities of India - Barnett p.218)

12. Further Excavation at Mohenjodaro - Mackay Vol.I, p.404;  
Excavations at Harappa - Vats MS, Vol.I, p.365.

13. Excavations at Harappa - Vats MS, Vol.I, pp.365-366.

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TENTATIVE DECIPHERMENT OF THE INSCRIPTIONS OF THE  
SEALS OF HARAPPA AND MOHENJODARO

(Abbreviations used in the decipherment tables. A, B, C and D:-

Mc = E. Mackay :- Further excavations at Mohenjodaro Vol.II.

MI = Sir John Marshall - Mohenjodaro and the Indus civilization Vol.III.

The inscriptions marked with numbers alone indicate the museum numbers of the seals, as tabulated by Mr. M.S.Vats in the report 'Excavations at Harappa' Vol.II).

The language of the inscriptions of the seals of Harappa and Mohenjodaro is sanskritic. Generally Aryan personal names (and place names) are inscribed on the seals. Combinations of two names and more than two names are also found to a lesser extent.

Just like the ancient coins on which 𑀘𑀓𑀭𑀯𑀭𑀮 (Maharajasa = Maharajasya), 𑀧𑀲𑀭𑀯𑀭𑀮 (Bishnudevasa = Bishnudevasya) etc. are written these seals are also embodied with 𑀲𑀭𑀯𑀭𑀮 (Dharmasa = Dharmasya) 𑀲𑀭𑀯𑀭𑀮 (Dharasa = Dharasya) i.e. this is possessed by Dharmma, this is possessed by Dhara etc.

The most important code for the decipherment of the Indus seals is the unnecessary repetition of the same alphabet twice, three or more times, most probably for decorative purpose :- e.g.

𑀲𑀭𑀯𑀭𑀮 11 𑀲𑀭𑀯𑀭𑀮; 𑀲𑀭𑀯𑀭𑀮 𑀲𑀭𑀯𑀭𑀮 𑀲𑀭𑀯𑀭𑀮; 𑀲𑀭𑀯𑀭𑀮 𑀲𑀭𑀯𑀭𑀮 𑀲𑀭𑀯𑀭𑀮  
MI 327 11381 MI 88

𑀲𑀭𑀯𑀭𑀮 11 𑀲𑀭𑀯𑀭𑀮; 𑀲𑀭𑀯𑀭𑀮 𑀲𑀭𑀯𑀭𑀮 𑀲𑀭𑀯𑀭𑀮; 𑀲𑀭𑀯𑀭𑀮 𑀲𑀭𑀯𑀭𑀮  
MI 551 MI 523 Mc 132

𑀲𑀭𑀯𑀭𑀮; 𑀲𑀭𑀯𑀭𑀮 𑀲𑀭𑀯𑀭𑀮; 𑀲𑀭𑀯𑀭𑀮 𑀲𑀭𑀯𑀭𑀮 𑀲𑀭𑀯𑀭𑀮; 𑀲𑀭𑀯𑀭𑀮 𑀲𑀭𑀯𑀭𑀮  
Mc 131 Mc 315 Mc 309 10137

𑀲𑀭𑀯𑀭𑀮 𑀲𑀭𑀯𑀭𑀮 𑀲𑀭𑀯𑀭𑀮; 𑀲𑀭𑀯𑀭𑀮 𑀲𑀭𑀯𑀭𑀮 𑀲𑀭𑀯𑀭𑀮; 𑀲𑀭𑀯𑀭𑀮 𑀲𑀭𑀯𑀭𑀮 𑀲𑀭𑀯𑀭𑀮  
Mc 322 Mc 186 Mc 367  
𑀲𑀭𑀯𑀭𑀮 𑀲𑀭𑀯𑀭𑀮 𑀲𑀭𑀯𑀭𑀮; 𑀲𑀭𑀯𑀭𑀮 𑀲𑀭𑀯𑀭𑀮 𑀲𑀭𑀯𑀭𑀮; 𑀲𑀭𑀯𑀭𑀮 𑀲𑀭𑀯𑀭𑀮  
Mc 367 Mc 518 MI 148



## 1. Compound Alphabet from the Seals of H and M

NO	Compound Constituent Alphabet	Constituent	Constituent	Constituent
1				
2				—
3				—
4				—
5				—
6				—
7				—
8				—
9				—
10				—
11				—
12				—
13				—
14				—
15				—
16				—









[illegible]



गजसैन	GAJASENA	ध - अ न अ	MC	DHARA-NARA
धन	DVANA	ध - अ न अ	697	धन नव
नारदस्य	NARADASYA	अ न ध न	MC	रणधन
धर्षकासेन	DHARSAKASE	अ न ध न	699	RAHADHANA
जगन्मय	JAGANNATHA	अ न ध न	MC	अगदेन
धन	DHANA	अ न ध न	702	AGADENA
धन	DHANA	अ न ध न	MC	JANA
धन	DHANA	अ न ध न	704	जन
धन	DHANA	अ न ध न	MC	गोधनक
धन	DHANA	अ न ध न	694	GO DHANAKA
धन	DHANA	अ न ध न	MC	नर्तयज
धन	DHANA	अ न ध न	2	NARTTADVAJA
धन	DHANA	अ न ध न	MC	अधन
धन	DHANA	अ न ध न	6	ADHANA
धन	DHANA	अ न ध न	MC	NARA
धन	DHANA	अ न ध न	8	नव
धन	DHANA	अ न ध न	MC	मयद
धन	DHANA	अ न ध न	10	BHAYADA
धन	DHANA	अ न ध न	MC	धरस्य
धन	DHANA	अ न ध न	11	DHARASYA
धन	DHANA	अ न ध न	MC	दास
धन	DHANA	अ न ध न	12	DASA
धन	DHANA	अ न ध न	MC	ADHA
धन	DHANA	अ न ध न	14	अध (ः)
धन	DHANA	अ न ध न	MC	गद, गध
धन	DHANA	अ न ध न	15	GADA, GADHA
धन	DHANA	अ न ध न	MC	वर्षा
धन	DHANA	अ न ध न	18	VARSA
धन	DHANA	अ न ध न	MC	वर्षा
धन	DHANA	अ न ध न	44	VARSAKA-NAGASYA
धन	DHANA	अ न ध न	MC	गण
धन	DHANA	अ न ध न	22	GA-NA
धन	DHANA	अ न ध न	MC	धननयज
धन	DHANA	अ न ध न	23	DHARA-TANA
धन	DHANA	अ न ध न	MC	धनज
धन	DHANA	अ न ध न	25	DHVANAJA
धन	DHANA	अ न ध न	MC	नवस्य
धन	DHANA	अ न ध न	29	NARASYA
धन	DHANA	अ न ध न	MC	दासज
धन	DHANA	अ न ध न	706	DASASA



ध - ना - - - - YA	Mc	धनज	GA-DHA- GA-YA	Mc	गद्य गज
३३ DHANAJA			६४		GADHA GAJA
GA-NA- - - -	Mc	GA NA		Mc	धरुख्य
३४		गण		66	DHARASYA
अ - ध - - -	Mc	अधः			गोधनख्य
३५		ADHA		68	GODHANA
A - DHA- - -					-SYA
न - GA- JA	Mc	नागज			दग्ध
३८		NAGAJA		71	DAGDHA
न - GA ज					स्वर्ग
३९		DVANA			गणन
DVA-NA- - -	Mc	धव			GA NENA
४०		DHARA			अज गद्य
DHA-RA - - -		ध्यान			AJA - GADHA
४३		DHYANA			दसनख्य
A - JA GA- A	Mc	अजगर			DASANASYA
४५		DHARASYA			NARASYA
DHA-RA-SSA- YA		मयनाशज			गणख्य
४६		DHANAGANENANA			GA NASYA
DHA-NA-GA-NA-NA		गण			अध्वरज
४७		GA NA			ADHVARAJA
GA-NA - - - -		धूमनास			धुनख्य
४८		DHUMANASA			DHUNASYA
DH U NA-NA-NA		धूलदख्य			ध्यानधनख्य
५०		DHULADASYA			DHYANA-DHA
DHU U LA-DHA-SA-SA		धरुख्य			-NASYA
५१		DHARASYA			जन-धर
DHA-RA-SSA		मयनाशक			JANA-DHARA
५२		BHAYANASAKA			दासेन
BHA-YA-NA - SA-GA		धरगणख्य			DA SENA
५४		DHARAGANA			स्वर्ग
DHARAGANA- SA		ध्यान			SVARGYA
५५		DHYANA			दान
NA-YA-DHA		धरण			ANA NA
५६		DHARAGANA			ध्यान
५७		DHYANA			DHYANA
५८		DHARAGANA			अजख्य
५९		DHYANA			A - GA - NA

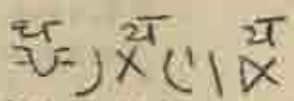
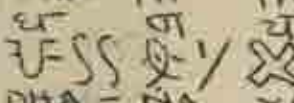
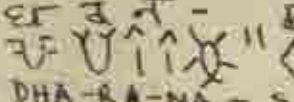

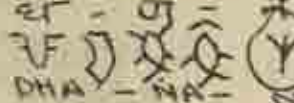
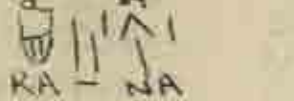
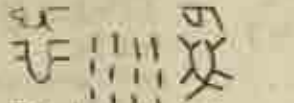
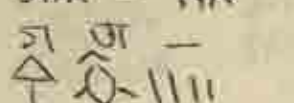
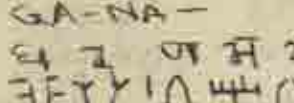
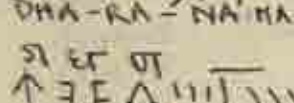
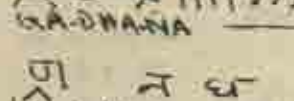
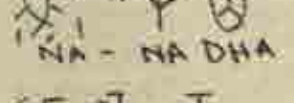
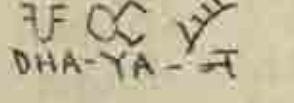
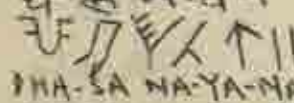
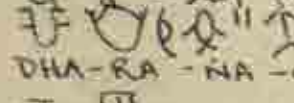
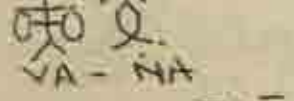

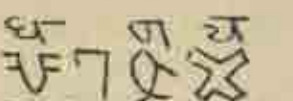
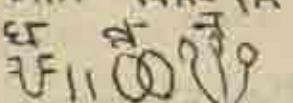
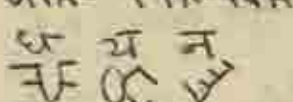
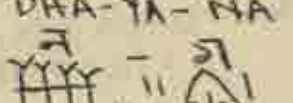

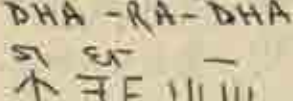
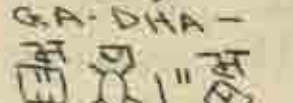
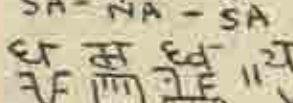
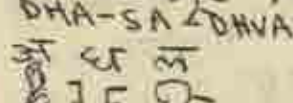
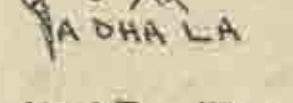
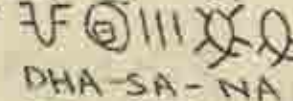
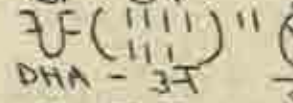
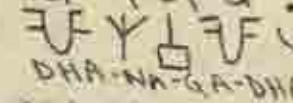
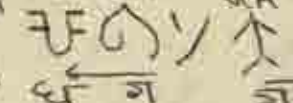

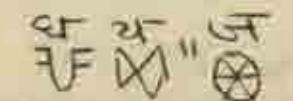



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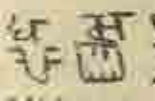


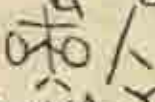
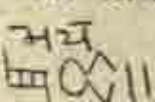
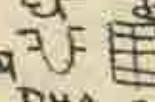
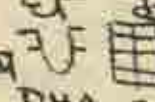
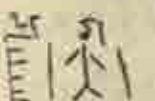
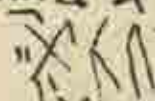
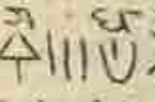
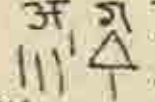
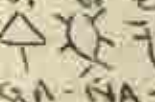
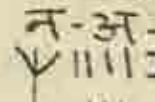
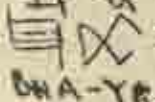
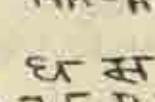
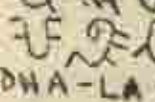
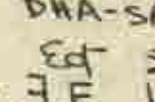
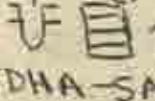
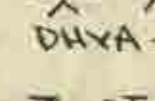
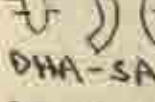
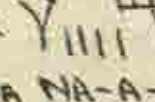
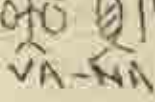
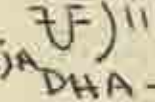
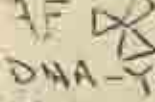
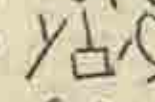
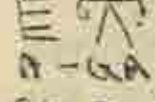
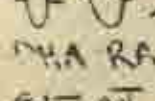


GA-NA MC 161	गण GANA	अनन ध अ A TA NA DHA-AT MC 185	रत्नधर RATNA DHARA
DHA-A-NA-YA - MC 163	धरण DHARANA	VA - NA - MC 186	वन VANA
DHA-A-BHA-YA MC 166	धरा DHARA	SA - MC 187	यशः YASA
DHA-RA-NA-MMA MC 167	धरा DHARA	NATTA GA MC 192	नर्तकी NARTT AKA
A-A-NA MC 170	अरण ARANA	GA NA - DHA-A MC 193	गन्धर्वा GANDH ARA.
DHVA-NA- MC 171	ध्वन- DHVANA-	A-NA-NA MC 196	आनन ANANA
DHA-YA-NA NA-A MC-174	गण GANA	DHA-GA-NA DHA-NA- MC 197	गन्धन GADHENA DHANA
A NA NA MC-175	ध्यान DHYANA	NA-AT-YA MC 198	नरज NARAJA
JANA-GA MC-176	अन- AN-NA	DHA-NA- MC 200	धन DHANA
GA HA LA-SA MC 177	गान GANA	DHA-YA-RA-SA MC 202	धर DHAR
YA-NA-DHA-RATTANNA SA MC 178	गान GANA	MA-YA-NA MC 204	यस्या YASYA
NA-A-SA MC 180	गान GANA	MA-YA-NA MC 205	अजग AJAGA
DHA-LA MC 181	गान GANA	MA-YA-NA MC 207	ट्टा TTA.
NA GA MC 182	गान GANA	MA-YA-NA MC 208	धर DHARA
GA NA MA-YA MC 183	गान GANA	MA-YA-NA MC 209	तन्मये TANMAYE
DHA-RA-NA MC 184	गान GANA	MA-YA-NA MC 210	ना NA
	गान GANA	MA-YA-NA MC 211	ध्यान DHYANA
	गान GANA	MA-YA-NA MC 212	गोधन GODHENA
	गान GANA	MA-YA-NA MC 213	धन DHANA
	गान GANA	MA-YA-NA MC 214	धर DHARA
	गान GANA	MA-YA-NA MC 215	धर DHARA
	गान GANA	MA-YA-NA MC 216	धर DHARA



<p>             DHA YA YA              DHA - NA YA              DHA - RA - NA - SA              DHA - YA - NA - DHA - YA              DHA - NA - NA              RA - NA              DHA - NA              GA - NA              DHA - RA - NA - NA - YA - NA              GA - DHANA              NA - NA DHA              DHA - YA - NA              DHA - SA - NA - YA - NA - DHA - SA              DHA - RA - NA - GA - DHA              VA - NA              SSA GA A              NA - GA - SA - LA         </p>	<p>           MC 220            MC 222            MC 224            MC 219            MC 221            MC 225            MC 227            MC 229            MC 231            MC 233            MC 234            MC 236            MC 237            MC 238            MC 239            MC 240            MC 241         </p>	<p>           ध्वजज DHVAJA JA            धनध DHANA JA            धरणध्व DHARANA - SYA            ध्यानध्वज DHYANA DHVA JA            धनेन DHANENA            रुण RA NA            धन DHANA            गण GA NA            धरणमयेन DHARANA - MAYENA            गौधनज GAODHANAJA            धनेन DHANENA            ध्यान DHYANA            दसनजनास्य DASANA JANADASYA            धरणगद DHARANA - GADA            वन VANA            स्वर्ग SVARGA            नागसर NAGASARA         </p>	<p>             DHA - NA - YA              DHA - TTA - NA              DHA - YA - NA              NA - GA              DHA - RA - DHA              GA - DHA              SA - NA - SA              DHA - SA - DHVA - YA              A DHA LA              DHA - SA - NA              DHA - NA              DHA - NA - GA - DHA - NA - SA              GA DHA SA              NA - A - YA              DHA - YA - JA              NA - TTA              NA - TTA         </p>	<p>           MC 243            MC 246            MC 248            MC 250            MC 253            MC 254            MC 256            MC 257            MC 258            MC 260            MC 262            MC 263            MC 264            MC 267            MC 268            MC 270         </p>	<p>           धनज DHANA JA            दत्तेन DATTENA            ध्यान DHYANA            गण GA NA            धरुव DHARADA            गद GA DA            सुनस SUMASA            दासध्वज DASA DHVA JA            अधरा ADHARA            अधर            दासेन DASENA            धरस्य DHARASYA            धनकधनास्य DHANAKA - DHANASYA            गद गदस्य GADA - GADA - SYA            नरज NARAJA            धजज DHVAJA JA            नर्त NARTTA         </p>
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 DHA-SA NA - - NAGA 271	दसन नगेशन DASA NA - NAGESA 271	 SSA-GA-A-DHA 292	स्वर्गगत MC SVARGA- GADA
 DHA-RMA-NA	धर्मोण MC 272 DHARMMANA VA-YA	 V A RA MC 293	वज्र
 BHA-YA	 DHA-SA-SA 294	 DA S ASYA MC 294	दासस्य
 A-GA	अग MC 274 A GA	 YA-NA-DHA-NA 295	जनधन MC 295 JANADHA NA
 GA-DHA-NA-NA	गोधनैन MC 275 GODHANENA	 A-GA-NA-SA 297	अगणस्य MC 297 AGANASYA
 GA-NA-DHA-GA-SA	गन्धकस्य MC 280 GANDHAKA -SYA	 NA-A-DHA 298	नारद MC 298 NARADA
 DHA-YA-DHA-NA-SA	भयधनस्य MC 281 BHAYADHA -NASYA	 DHA-SA-DHA-NA-GA 300	दशधनस्य MC 300 DASADHA -NAKA
 DHA-LA-NA-MA-YA	धरणमय MC 282 DHARANA -MAYAS	 DHYA-GA-SA 304	अध्वगस्य MC 304 ADHYAGA -SYA
 DHA-SA-GA	दशगव MC 283 DASAGA	 NA-A-MA-DHA-YA-SSA 301	नरमधस्य MC 301 NARAMA- DHYASYA
 VA-NA-JA-DHA	वनध्वज MC 286 VANA-DHVAJA	 DHA-NA-JA 302	धनज MC 302 DHANAJA
 DHA-YA-LA-SA	ध्वजालस्य MC 288 DHVAJALA -SYA	 GA-NA 303	गण MC 303 GANA
 A-GA-SA	अगस्य MC 289 AGASYA	 DHA-NA-DHA-YA 305	ध्वनध्वन MC 305 DHVANA -DHVAJA
 DHA-R-NA-SSA	धार MC 291 DHARA -NIRASYA		
 DHA-LA-NA	धारण MC 291 DHARANA		

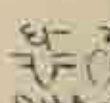
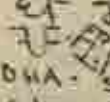
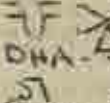
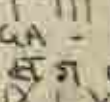
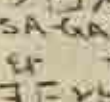
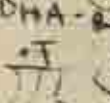
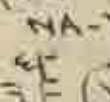
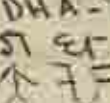
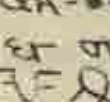
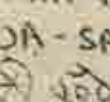

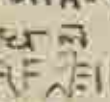
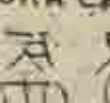

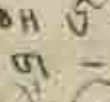
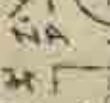
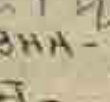
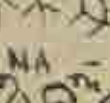


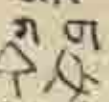
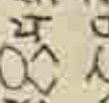

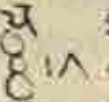


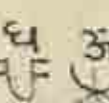
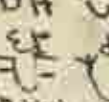
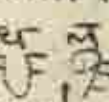
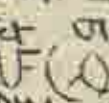
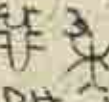
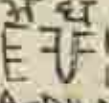



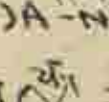
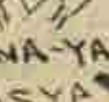


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 DHA-YA-LA-NA-SA-GA  DHA-SA-NA  DHA-YA-NA  GA-DHA-JA  SA-GA-NA-SA  DHA-RMM-NA  NA-YA-GA-SA  DHA-NA-DHA-NA-GA  GA-DHA-NA-DA-SA  DHA-NA-DHA-YA-GA  JA-SA-YA-NA  DHA-YA-NA-SA  DHA-LA-DHA-NA  VA-NA-DHA-SA  DH-U-YA-NA-SA-NA  NA-RA  DHA-YA  NA-SA-GA-GA  NA-435	Me धज 407 अंशका Me दसन 409 DASANA Me ध्यान 410 DHYANA Me गदज 411 GADAJA Me सुगणस्थ 413 SU Me धर्मण 414 DHARMHANA धर्मण Me नायकस्थ 415 NAYAKASTHA Me धनधनज 418 DHANA-DHANAGA Me गौधनदस्थ 419 GODHANADA-SYA Me धनधनज 420 DHANA-DHAYAKA Me यशः जन 422 YASA JANA Me ध्यानस्थ 424 DHYANASTHA Me धरधन 426 DHARADHANA Me वनदस्थ 428 VANADASTHA Me दुर्जनसेन 429 DURJANA-SENA Me नर 432 NARA Me भय 433 BHAYA Me गगमेन 436 GAGA-SENA Me 435 435	 GA-NA-YA-JA  GA-NA-DHA-SA  YA-NA-NA  NA-TTA-DHA-VA  YA-GA-JA  DHA-RA-SA  DHA-LA-DHA-NAGA-SA  DHA-NA-YA-YA-NA  DH-U-MAGA  A-DHA-SA-NA  SSA-GAGA-DHYANA  NA-NA-SA  NA-YA-DHA-NA  NA-YA-DHA-NA  NA-YA-DHA-NA  NA-YA-DHA-NA  NA-YA-DHA-NA  NA-YA-DHA-NA  NA-YA-DHA-NA	Me गणज 439 GANAJA Me गणदस्थ 440 GANADA-SYA Me जनेन 441 JANENA Me नर्तदेव 443 NARTTA-DEVA Me अगज 445 AGAJA दशधनजन Me DASADHANA JANASTHA 446 Me धूमनज 447 DHUMANAJA Me धरस्थ 450 DHARASTHA Me धरधनकस्थ 449 DHARA-DHANAKA-SYA Me धनज 451 DHANAJA Me धूमक 453 DHUMAKA Me अधसेन 457 ADHASENA Me सुगीधन 461 SVARGA-DHYANA Me दान 464 DANA Me जनस्थ 468 JANASTHA Me नयधन 469 NAYADHANA
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ग - ध - म  
GA - DHA - SA

ध - ध - म  
DH - DHA - SA

ध - अ - म - म  
DH - A - MA - SA

ध - म - म - म  
DHA - SA - SA - SA

ध - न - म - म  
DHA - NA - SA - SA

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DH - A - MA - SA - SA

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DH - A - MA - SA - SA

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DHA - RA - TTA - YA -

ध - न - म - म  
DHA - NA - GA

ध - अ - ध - य  
DHA - A - DHA - YA

ध - य  
DHVA - JA

ध - न - ग - न - म  
SA - NA - GA - NA - SA

ध - य - न  
DHA - YA - NA

ध - य - न - म  
DHA - YA - NA - JA

ध - म  
DHA - KA

Mc गदस्य  
470 GADASYA

Mc ध्वजस्य  
471 DHVAJASYA

Mc धूमस्य  
476 DHUMASYA

Mc दासस्य  
478 DĀSASYA

Mc धनज  
480 DHANAJA

Mc धूलोत्ता  
481 DHULOTTA  
MASYA

Mc ग्रामस्य  
485 GRAMASYA

Mc धरत्रज  
486 DHARATTRAJA

Mc धनक  
489 DHANAKA

Mc धारा  
492 DHARA

Mc ध्वज  
493 DHVAJA

Mc सुनगमा  
495 SUNAGMA  
SYA

Mc ध्यान  
496 DHYANA

Mc ध्यानज  
498 DHYANAJA

Mc धार  
499 DHARA

ग - ध - म  
GA - DHA -

ध - म - न  
DHA - SA - NA

ग - न - म  
GA - NA - SA

ध - म - न  
DHA - SA - NA

ध - य - य  
DHA - YA - YA

ग - ध - न - म  
GA - DHA - NA - SA

ध - न - ध  
DHA - NA - DHA

न - ध - य - म  
NA - DHA - YA - SA

ग - ध - न  
GA - DHA - NA

ग - न - म  
GA - NA - SA

अ - न  
A - NA

ध - अ - न  
DH - A - NA

ध - न - म  
DHA - NA - SA

ध - न - म  
DHA - NA - NA

ग - न - य  
GA - NA - YA

Mc गद  
501 GADA

Mc दासन  
502 DASANA

Mc गणस्य  
504 GANASYA

Mc दासन  
505 DASANA

Mc ध्वज  
505 DHVAJA

Mc गोधनस्य  
507 GODHANA  
- SYA

Mc धनद  
517 DHANADA

Mc नदध्वजस्य  
522 NADADHYA  
- JASYA

Mc गोधन  
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Mc नर  
525 NARA

Mc धून  
526 DHUNA


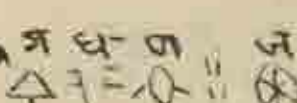
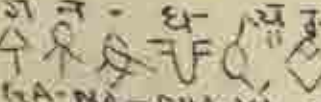
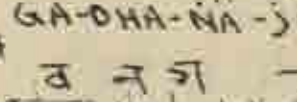

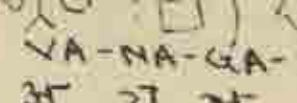
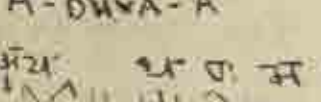
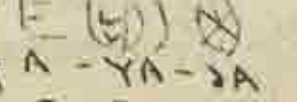
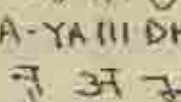
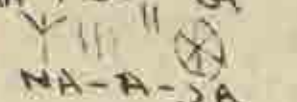
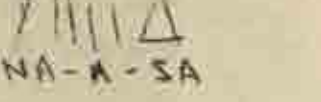

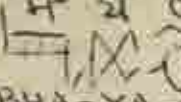
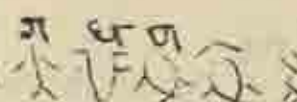
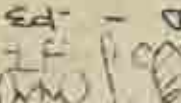
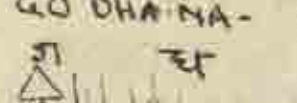
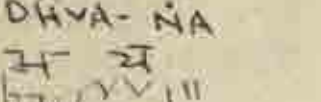
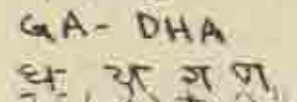
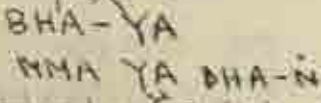
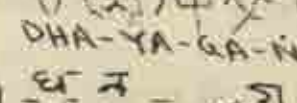

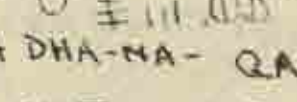
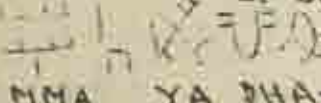

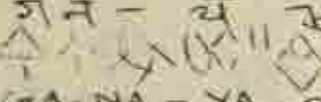
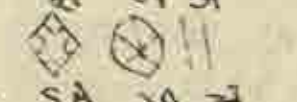


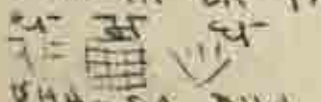
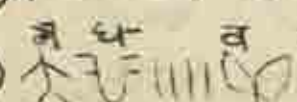
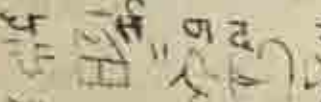
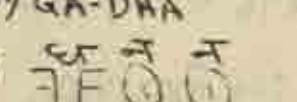
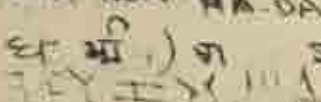
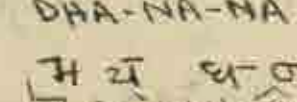
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Mc धूमस्य  
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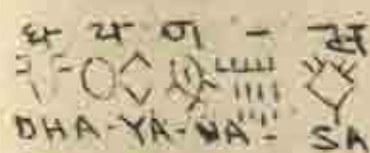
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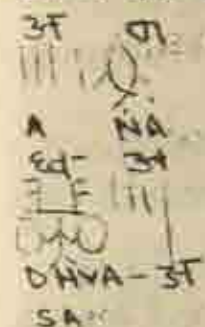
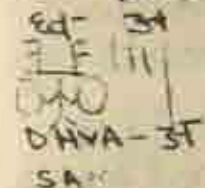
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536 GANAJA



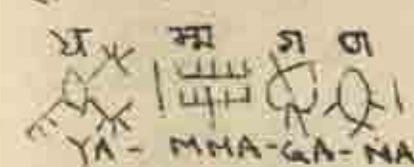
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<p>ग न - ध - य म न    GA-NA-DHA-YA-SA-NA</p>	<p>गण ध्वजनेन  Mc GANA  534</p>	<p>व न ग म    VA-NA-GA-SA</p>	<p>वनगह्य  Mc VANAGA  564</p>
<p>अ ध अ    A-DHA-A</p>	<p>अध्वर  Mc ADHYARA  540</p>	<p>अ य म    A-YA-JA</p>	<p>अजज  Mc AJAJA  571</p>
<p>अ य ध ण म य    A-YA-DHA-NA-MA-YA</p>	<p>अज धनमय  Mc AJA-DHANAMA  541</p>	<p>न अ म    NA-A-SA</p>	<p>नरज  Mc NARAJA  572</p>
<p>न अ म    NA-A-SA</p>	<p>नरस्य  Mc NARASYA  542</p>	<p>ध र म    DHA-RSA</p>	<p>धर्षध्व(ज)  Mc DHARSA  573</p>
<p>भ य ण म    BHA-YA-NA-SA</p>	<p>भयनस्य  Mc BHAYANA  545</p>	<p>ग ध ण म    GA-DHA-NA-SA</p>	<p>गौधनस्य  Mc GODHANA  574</p>
<p>ध - ण    DHA-NA</p>	<p>ध्वज  Mc DHVANA  549</p>	<p>ग ध    GA-DHA</p>	<p>गद  Mc GADA  575</p>
<p>भ य    BHA-YA</p>	<p>भय  Mc BHAYA  551</p>	<p>ध य ग ण ज    DHA-YA-GA-NA-JA</p>	<p>ध्वजगणज  Mc DHVAJA  576</p>
<p>भ य ध ण म    BHA-YA-DHA-NA-SA</p>	<p>भयधनस्य  Mc JANMA  552</p>	<p>ध न    DHA-NA-QA</p>	<p>धनक  Mc DHNAKA  577</p>
<p>भ य ध ण म    BHA-YA-DHA-NA-SA</p>	<p>भयधनस्य  Mc JANMA  553</p>	<p>ध ण - ज    DHA-NA-JA</p>	<p>धनज  Mc DHANAJA  578</p>
<p>भ य ध ण म    BHA-YA-DHA-NA-SA</p>	<p>भयधनस्य  Mc JANMA  554</p>	<p>म ज अ    SA-JA-A</p>	<p>अयश(०)  Mc AYASA  579</p>
<p>भ य ध ण म    BHA-YA-DHA-NA-SA</p>	<p>भयधनस्य  Mc JANMA  555</p>	<p>ध य म    DHA-YA-SA</p>	<p>धरस्य  Mc DHARASYA  580</p>
<p>भ य ध ण म    BHA-YA-DHA-NA-SA</p>	<p>भयधनस्य  Mc JANMA  556</p>	<p>ध य म    DHA-YA-SA</p>	<p>गदवनेन  Mc GADA  581</p>
<p>भ य ध ण म    BHA-YA-DHA-NA-SA</p>	<p>भयधनस्य  Mc JANMA  557</p>	<p>ध य म    DHA-YA-SA</p>	<p>धनेन  Mc DHANENA  582</p>
<p>भ य ध ण म    BHA-YA-DHA-NA-SA</p>	<p>भयधनस्य  Mc JANMA  558</p>	<p>ध य म    DHA-YA-SA</p>	<p>भयधनस्य  Mc BHAYA  583</p>
<p>भ य ध ण म    BHA-YA-DHA-NA-SA</p>	<p>भयधनस्य  Mc JANMA  559</p>	<p>ध य म    DHA-YA-SA</p>	<p>भयधनस्य  Mc BHAYA  584</p>
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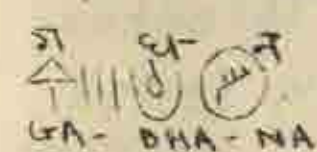


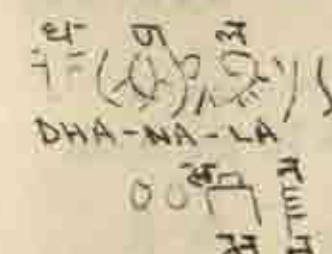
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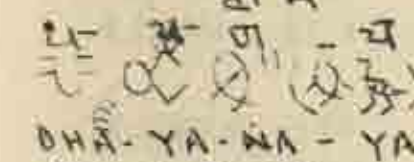
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 A-NA  
 ध अ  
  
 DHA-A

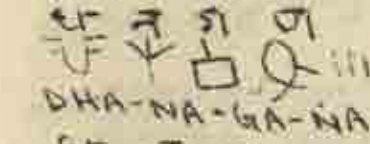
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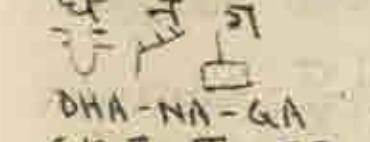
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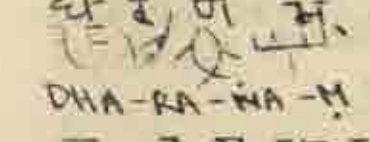
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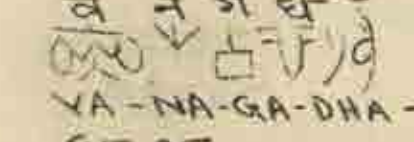
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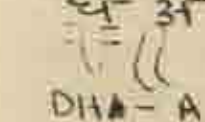
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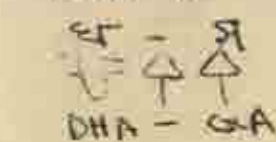
ध न ग ण  
  
 DHA-NA-GA-NA

ध न ग  
  
 DHA-NA-GA

ध ण न म  
  
 DHA-RA-NA-M

व न ग ध -  
  
 VA-NA-GA-DHA

ध अ  
  
 DHA-A

ध - ग  
  
 DHA-GA

Mc ध्यानस्य  
 584 DHYANA  
 -SYA

Mc नर  
 585 NARA  
 अध्व  
 ADHYA

Mc नाशस्य  
 587 NĀŚASYA

Mc जन्मगेन  
 588 JANMAGENADHA-SANA  
 SA

Mc गदेन  
 589 GADENA

Mc धनस्य  
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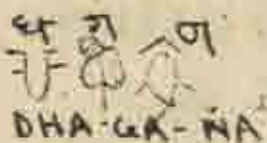
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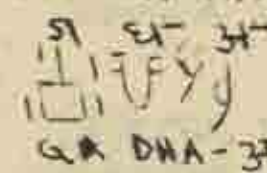
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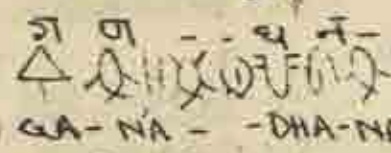
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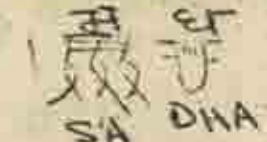
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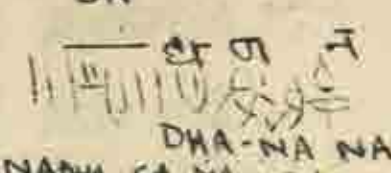
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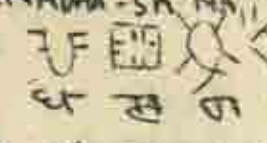
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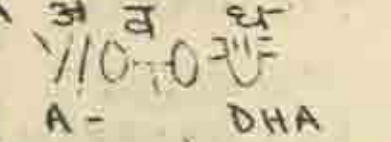
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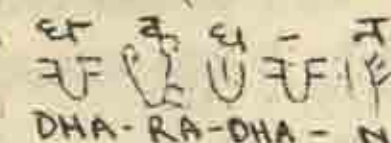
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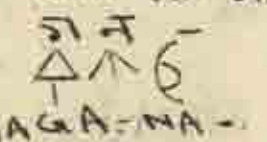
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 SA-DHA

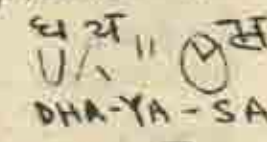
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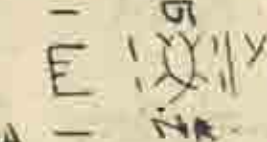
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 A-DHA

ध क ध - न  
  
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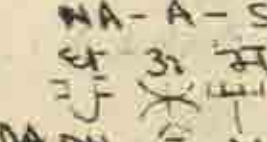
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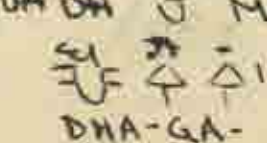
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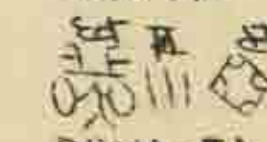
ध ण न  
  
 NA-A-SA

ध अ म  
  
 DHA-GA-SA

ध ण न  
  
 DHA-RA-SA

ध ण न  
  
 DHA-RA-SA

ध ण न  
  
 DHA-RA-SA

ध ण न  
  
 DHA-RA-SA

Mc गदेन  
 608 GADENA

Mc गंधार 10  
 613 GANDHAR

Mc गण-धनस्य  
 614 GANA-  
 DHANASYA

Mc दास  
 616 DĀSA

Mc धनेन  
 617 DHANENA

Mc दसनस्य  
 618 DASANA-  
 SYA

Mc अवध  
 620 A DHA

Mc धार धन  
 621 DHARA  
 -DHANA

Mc गण  
 622 GANA

Mc धवाजस्य  
 623 DHVAJASYA

Mc गण  
 625 GANA

Mc नरस्य  
 626 NARASYA

Mc धूम  
 627 DHŪMA

Mc गदस्य  
 631 GADASYA

Mc अध्वरस्य  
 633 ADHVARA-  
 -SYA



अ ध न ग म  
DHVA-DA-SA

न अ म  
NA-A-SA

ध म  
DHVA A

न अ म  
NA-A-SA  
DHA-SA-NA-DHA-GA

ध म न ध ग  
अ न अ म

A NA-A-SA

य म ग ज  
YA-SA-GA-JA

म य  
BHA-YA

ध म  
DHA-RA-SA

ध म ध न ध म न ग द ध म ध न ध म  
DHA-SA DHA-NA-SSA-GA-GA

ध म ध न  
DHA-RA-DHA-NA-NA

ध म न  
DA-SA-NA

न अ ग ध न  
NA-A-GA-NA-VA

ध अ  
DHA-A

अ न  
A-NA

Mc अध्वरुथ  
635 ADHVADA-SYA

Mc नरुथ  
636 NARASYA

Mc अध्व  
639 ADHVA

Mc नरुथ  
642 NARASYA

Mc दसन गद  
643 DASANA GADA

Mc अनरुथ  
644 ANARASYA

Mc अश गज  
651 YASA GAJA

Mc भय  
652 BHAYA

Mc धरुथ  
653 DHARASYA

Mc धर धनेन  
655 DHARA DHANENA

Mc दसन  
656

Mc नरुगदेन  
657 NARA GADENA

Mc धर  
659 DHARA

Mc नर  
658 NARA

अ ध न ग म  
A-DHA-NA-GA-SA  
A-RDHA-GA

अ ध ग  
ध म म  
DHA-SA-SA

ध म ध म  
DHA-A-DHA-YA

ध अ म  
DHA-A-SA

ध म न ग  
DHA-YA-NA-GA

ध म  
DHA-YA

ध म  
DHA-RA

ग म म म  
GA MA-SA

ध य न  
DHA-YA-NA

ध य  
VA-YA

ध अ म  
DHA-A-SSA

ध म म म  
DHA-RA-SSA

ध य न ध य  
DHA-YA-NA-DHA-YA

PLATE-C

ध अ म  
DHA-A-SA

Mc अधनरुथ  
660 ADHANAKA-SYA

Mc अधक  
662 ARDHAKA

Mc दासुथ  
663 DASASYA

Mc धरुध्वज  
664 DHARADHVA-JA

Mc धरुथ  
665 DHARASYA

Mc ध्वज नाग  
666 DHVAJA-NAGA

Mc ध्वज  
671 DHVAJA

Mc धर  
672 DHARA

Mc ग्रामरुथ  
674 GRAMASYA

Mc ध्यान  
676 DHYANA

Mc वज्र  
678 VASRA

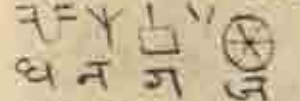
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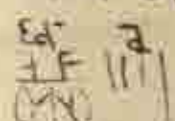
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680 धरुथ

Mc ध्यानध्वज  
685 DHYANA DHVAJA

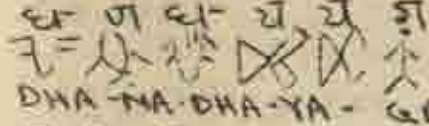
DHARASYA  
धरुथ



DHA-NA-GA-JA  
  
 धनगज

धन  


DHA-NA

धन धन धन धन धन  
  
 DHA-NA-DHA-YA-GA

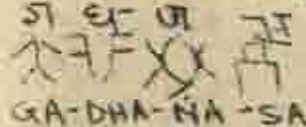
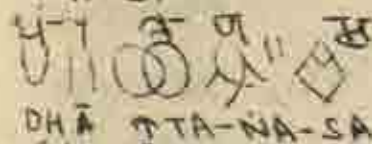
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 GA-DHA-NA-SA

PLATE - CII

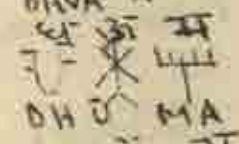
न अ  


NA-A

धन अ धन अ धन अ  
  
 DHA-NA-SA

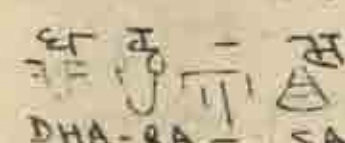
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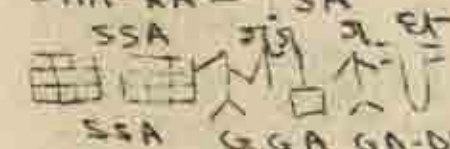

DHA-A

धन अ धन अ धन अ  
  
 DHA-MA

धन अ धन अ धन अ  
  
 DHA-MA

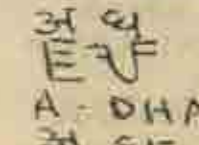
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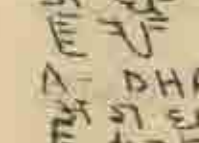
धन अ धन अ धन अ  
  
 DHA-RA-SA

SSA गगन गगन गगन  
  
 SSA GA-GA-GA-DHA

ॐ

अ धन  
  
 SA-DHA

अ धन  
  
 A-DHA

अ धन  
  
 A-DHA

अ धन  
  
 A-DHA

11626

दास  
 DASA

11136

अध(०)  
 ADHA

4552

अध(०)  
 ADHA

12329

अध(०)  
 ADHA

धनगज  
 A DHANAGAJA

अधन  
 E ADHVARA

धनधनधन  
 DHANA  
 DHVA)AKA

G GODHANA  
 SYA  
 गोधनस्य

4a NARA  
 नर

7b धारित्त  
 DHARTTA  
 NASA

2a अधन  
 ADHVA

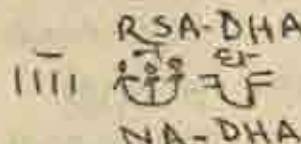
10b धूम  
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10a धूम  
 DHUMA

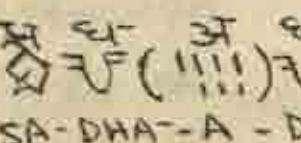
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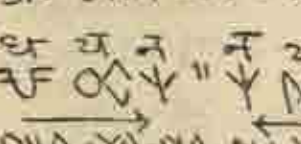
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 -GADA  
 स्वर्गगद

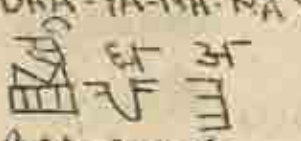
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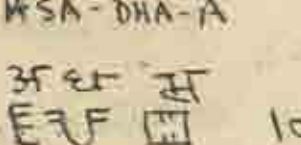
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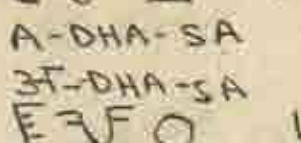
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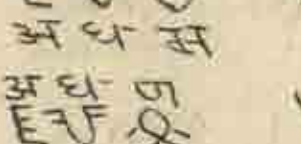
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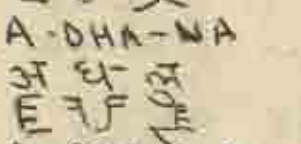
धन न न धन  
  
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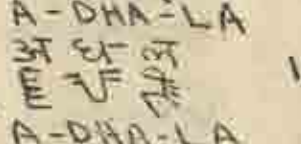
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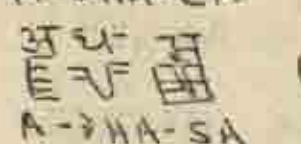
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 10928(a)

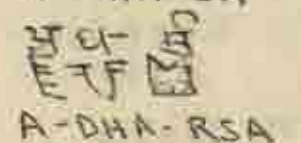
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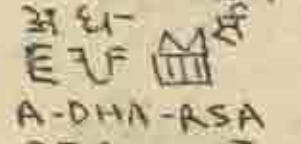
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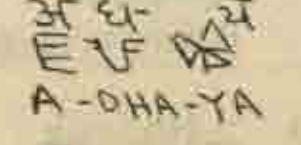
A-DHA-NA  
  
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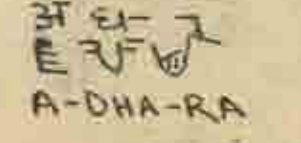
A-DHA-LA  
  
 10185(c)

A-DHA-LA  
  
 12327

A-DHA-SA  
  
 12412(c)

A-DHA-RSA  
  
 12581

A-DHA-YA  
  
 5498

A-DHA-RA  


धन  
 DHARSA

धन  
 DHANA

धनसैन  
 DHVA)A  
 SENA

धरदास  
 DHARA  
 -DASA

ध्यानधन  
 DHYANA  
 DHYANA

अधन  
 ADHARSA

अधन  
 ADASA

अधन  
 ADASA

अधन  
 ADHANA

अधन  
 ADHARA

अधन  
 ADHARA

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 ADASA

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 ADHARSA

अधन  
 ADHARSA

अधन  
 ADHVAJA

अधन  
 ADHARA



A-DHA-GA E F H I J अध ग	10614 (a) 11798	अधग ADHAGA	अ ध स ण E F H I J X A-DHA-SA-NA	1419	अधसेन ADHASENA
अ ध स ण E F H I J A-DHA-SSA	10059	अधस ADHASTA	अ ध उ ण E F H I J X A-DH U NA	8800	अधून ADHUMA
अ ध न ग E F Y H A-DHA-NA-NA	10614 (a)	अधनक ADHANAKA	अ ध य E F H I J X A-DHA-YA	11064	अध्वज ADHVAJA
अ ग ध ण ण E F H I J X A-GA-DHA-NA-NA	10928 (a)	अग धनेन AGA-DHA NENA	न ध ण ण 10, E F H I J X A-GA-DHA-NA-NA	11449	'न' धनेन 'NA' DHANE NA
अ ध र E F H I J A-DHA-RSA	1235	अधर ADHARSA	अ ग ध ण E F H I J X A-GA-DHA-NA	11795	अग धन AGA-DHANA
ग ध ण E F H I J GADHA-NA	11266 (a)	गोधन GODHANA	अ ग ध उ म E F H I J X A-GA-DH U MA	5617	अगधूम AGA DHU MA
अ ध ल E F H I J A-DHA-LA	11715	अधल ADHARA	अ ध ण E F H I J X A-DHA-TTA-NA	2461	अद्धनेन ADATTENA
अ ध ल E F H I J A-DHA-LA	10185 (c)	अधल ADHARA	अ ध स स E F H I J X A-DHA-SA-SSA	1359	अदासस्य ADASA -SYA
अ ध स E F H I J A-DHA-SA	12357	अदास ADASA	अ ध स स E F H I J X A-DHA-SA-SSA	5974	अदासस्य ADASA -SYA
न ध स E F H I J X NA-DHA-SA	12185	नदास्य NADASYA	अ ध ण य E F H I J X YA-DHA-NA-YA	8951	अधनज ADHANAJA
अ ध E F H I J A-DHA	11291	अध (०) ADHA	ध न - ध र ण E F H I J X DHA-NA-DHA-NA	336	धन धण DHANA DHARANA
अ ध न स E F H I J X A-DHA-NA-SA	2868	अधनस्य ADHANAS- SYA	ध र ण E F H I J X -DHA-RSA-SA-NA	1455	धरसेन DHARSA -SENA
अ ध र E F H I J A-DHA-TTA	A(1)279	अद्ध ADATTA	अ ध स ध ल - स E F H I J X SA-DHA-SA-ध ल SA	2455	सुदास SUASA DHARASTA
अ ध र E F H I J A-DHA-RSA-LA	4080	अधरसल ADHARSALA	ग ध ण E F H I J X GO-DHA-NA - य	11841	गोधनज GODHANA JA
अ ध स E F H I J A-DHARSA-SA	4631	अधसस्य ADHARSA- SYA	अ ध स ण E F H I J X A-DHA-SA-NA	3758	अधसेन/व ADHASENA VA
ग ध ण E F H I J GA-DHA-NA	5634	गोधन GODHANA			



अधनगणन अधनगणन	११८५३	धन
ADHANAGANENA	DHA-NA	DHANA
A-DHA-NA-GA-NA-NA		
अध ध ग न अधधन	१-३०	धर
ADHA   DHANENA	DHA-A	DHARA
A-DHA-DHA-NA-NA 10997		
अध-म-ज-य अधमनज	११-५५	धन
ADHASENA	DHA-NA	DHANA
A-DHA-SANA-NA		
अध ध ग न अधधनमयज	A-५५१	दस
DHAYA	DHA-SA	DASA
NA MAYA YA DHANAMAYAJA		
P 11-21	A-703	दत्त
ध ग		DATTA
५१०४ धज	DHA-TTA	
DHA-YA	DHA-GA	
ध-म	१५८१	गद
DHA-MMA	१२१३२	दस
ध अ		DASA
DHA-A	५८१०	धर्षक
ध य		DHARSAKA
DHA-YA		
ध-म	११७५१	धरस्य
DHA-SA		DHARASYA
ध य	८६८	धरग
DHA-YA		DHARAGA
ध-म	११५१२	धरजन
DHA-LA		DHARAJANA
ध य	११७	धनज
DHA-YA		DHANAJA
ध-म	१२२५१	धरज
DHA-YA		DHARAJA
ध-म	१६९७	दसन
DHA-SA-SA		DASANA
ध-अ	१०९६५	धनस्य
DHA-A		DHANASYA
DHA-NA-GA		
ध न ग	११३३३	दसनस्य
DHANAKA		DASANA-SYA
ध-म	१२०३५	धरज
DHA-JA		DHARATTA



धनगण ॐ नमो भगवते वासुदेवाय DHA-NA-GA-NA	12548 12548	धनगण DHANA-GANA	धनगण धन ॐ नमो भगवते वासुदेवाय DHA-LA-NA-DHA-SA	H220	धनगण DHANA-GANA
धनगण ॐ नमो भगवते वासुदेवाय DHA-RA-	12574 12548	धनगण DHARA	धनगण धन ॐ नमो भगवते वासुदेवाय DHA-NA-GA-NA	2266	धनगण DHANA-GANA
धनगण ॐ नमो भगवते वासुदेवाय DHA-TTA	12574 12548	धनगण DHARTTA	धनगण धन ॐ नमो भगवते वासुदेवाय DHA-NA-DHA-RA	3463	धनगण DHANA-GANA
धनगण ॐ नमो भगवते वासुदेवाय DHA-NA	12574 12548	धनगण DHANA	धनगण धन ॐ नमो भगवते वासुदेवाय DHA-LA-DA-SYA	H 605	धनगण DHANA-GANA
धनगण ॐ नमो भगवते वासुदेवाय DHA-SA-YA	12574 12548	धनगण DASAJA	धनगण धन ॐ नमो भगवते वासुदेवाय DHA-YA-NA-YA	PI-2	धनगण DHANA-GANA
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धनगण ॐ नमो भगवते वासुदेवाय DHA-GA-SA	12574 12548	धनगण GADASYA	धनगण धन ॐ नमो भगवते वासुदेवाय DHA-YA-NA-YA	12537	धनगण DHANA-GANA
धनगण ॐ नमो भगवते वासुदेवाय DHA-YA-NA	12574 12548	धनगण DHYANA	धनगण धन ॐ नमो भगवते वासुदेवाय DHA-YA-NA-YA	2540	धनगण DHANA-GANA
धनगण ॐ नमो भगवते वासुदेवाय DHA-RMMA-NA-SA	12574 12548	धनगण DHARMMA-NA-SA	धनगण धन ॐ नमो भगवते वासुदेवाय DHA-YA-NA-YA	4965	धनगण DHANA-GANA
धनगण ॐ नमो भगवते वासुदेवाय DHA-RSA-YA-SA	12574 12548	धनगण DHARSAJASYA	धनगण धन ॐ नमो भगवते वासुदेवाय DHA-YA-NA-YA	4965	धनगण DHANA-GANA
धनगण ॐ नमो भगवते वासुदेवाय DHA-A-NA-SA	12574 12548	धनगण DHARANA-SYA	धनगण धन ॐ नमो भगवते वासुदेवाय DHA-YA-NA-YA	4965	धनगण DHANA-GANA
धनगण ॐ नमो भगवते वासुदेवाय DHA-SA-NA-VA	12574 12548	धनगण DASANA-VA	धनगण धन ॐ नमो भगवते वासुदेवाय DHA-YA-NA-YA	4965	धनगण DHANA-GANA
धनगण ॐ नमो भगवते वासुदेवाय DHA-NA-GA-DHA-	12574 12548	धनगण DHANA-GADA	धनगण धन ॐ नमो भगवते वासुदेवाय DHA-YA-NA-YA	4965	धनगण DHANA-GANA
धनगण ॐ नमो भगवते वासुदेवाय DHA-SA-NA-YA	12574 12548	धनगण DASANAJA	धनगण धन ॐ नमो भगवते वासुदेवाय DHA-YA-NA-YA	4965	धनगण DHANA-GANA
धनगण ॐ नमो भगवते वासुदेवाय DHA-SA-NA	12574 12548	धनगण DASAJA	धनगण धन ॐ नमो भगवते वासुदेवाय DHA-YA-NA-YA	4965	धनगण DHANA-GANA



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अ ध र	12576	अधर	ध अ ण	2700	धरण
A-DHA-RA		ADHARA	ध ण		DHARANA
य र ध र	8650(6)	अधरज	ध ण	2785	दासज
YA-RA-DHA-A		ADHARAJA	DHA-SA- - JA		
ध न ध अ	2257	अधर धर	ध र ण		धरण
DHVA-LA-DHA-A		ADHVARA	DHA-RA-NA - -		DHARANA
अ ध	12104	अध (३)	ध ण	1133	दसनस्य
A-DHA		ADHA	DHA-SA-NA- SA		DASANASYA
ध य र न ध ग	12066	धवज रुधक	ध र ध ण	11352	धर धन
DHA-YA-RA-NA-DHA-A		DHVAJA	DHA-RA DHA-NA		DHARA DHANA
अ ध ण म य		RAN DHAKA	ध ण ग य ण	2785	दशगजस्य
A-DHA-NA-MA-YA		ADHANA	DHA-SA-GA-YA-SA		DASAGAJASYA
न य ध ण		MAYA	ध न ग ण - ध	11368	धनः गणद
NA-YA-DHA-NA- SYA		NAYADHANA	DHA-NA-GA-NA-DHA		DHANA-
ध य	130	- SYA	ध ण		GA NA DA
DHA-YA	141	धवज	ध ण		दासकस्य (न)
DHVAJA		DHVAJA	DHA-SA - GA-SA-DHA		DASAKASYA
ध उ ण	10186	धून	1056		DHVA(JA)
DHUNA		DHUNA	ध 1 ण		
ध न	11305	धन	ध अ ण ण		
DHANA		DHANA	DHA TTA-NA - DHA-RA-GA-SANA		
दासद	627	दासद	5399		DHARTENA
DASADA		DASADA	न अ ध - ग धात्रेण		धरक
DHANADA	3644	धनद	य ण ण ण		सैन
DHANADA		DHANADA	NA-A-DHA-GA - 5399		नर गद
अगद	272	अगद	ध न		NARAGADA
AGADA		AGADA	ध न		
GADANASA	1240	गदनस	ध न		धन धनक
GADANASA		GADANASA	DHANA - DHANAGA		DHANA
धात्रेज	5534	धात्रेज	DHANAKA		
DHARTTAJA		DHARTTAJA	MA: DHANAGA		MA: DHANAKA
धनज	2118	धनज	MA: DHANAGA		MA: DHANAKA
DHANAJA		DHANAJA	MA: DHANAGA		MA: DHANAKA



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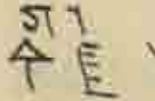


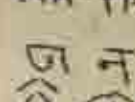
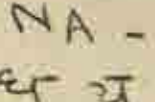
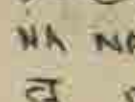
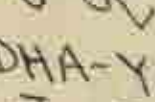
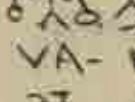



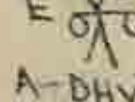
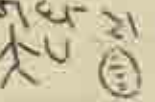
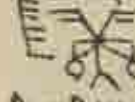

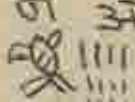
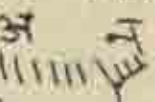

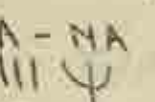
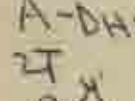

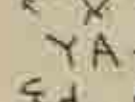





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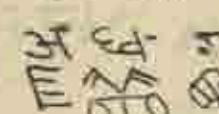
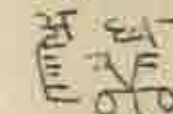
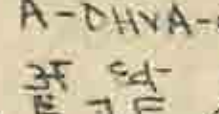

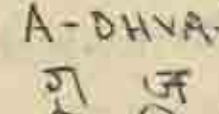
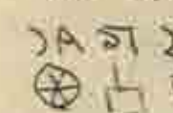
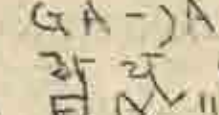
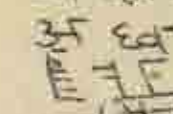
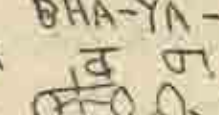



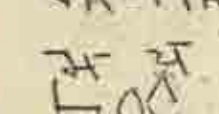

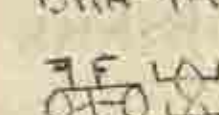

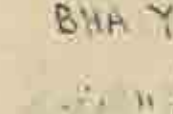
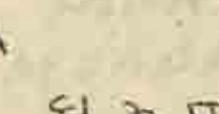

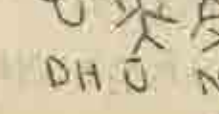
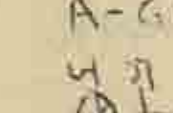



न भ म य ण - ४ ५५ ५५ ५५ ५५ ५५ ५५ NA-YA-BHA-YA-NA- - SA- 3725	नयमयनस्य NAYA BHA- -YANASYA	ग ण ण ५ ५ ५ ५ ५ ५ GA-NA-NA	5498	गणेन GANENA
य ण ५ ५ ५ ५ ५ ५ YA-NA	१०६० जन JANA	अ व ण ५ ५ ५ ५ ५ ५ A-VA-NA	8650 (९)	अवन AVANA
अ ग ण ५ ५ ५ ५ ५ ५ A-GA-NA	११७१४ अगण AGANA	ग न - ण ५ ५ ५ ५ ५ ५ GA-NA-NA	१००९	गणेन GANENA
भ य ण ५ ५ ५ ५ ५ ५ BHA-YA-NA	९०१५ भयेन BHAYENA	ग ण - ण ५ ५ ५ ५ ५ ५ GA-NA-NA	४३९६	गणेन GANENA
ग ण - य ५ ५ ५ ५ ५ ५ GA-NA- YA	११३६९ गणज GANAJA	ग ण - ण ५ ५ ५ ५ ५ ५ GA-NA-NA	११३८१	गणज GANAJA
ग ण ५ ५ ५ ५ ५ ५ GA-NA	११०२७ गण GANA	ग ण न य ५ ५ ५ ५ ५ ५ GA-NA-NA	६२५०	गणनस्य GANANASA
भ य ण ५ ५ ५ ५ ५ ५ BHA-YA-NA	P ११-१ भयेन BHAYENA	ग व ५ ५ ५ ५ ५ ५ GA-NA-NA	१५८०	वन VANA
भ य ण ५ ५ ५ ५ ५ ५ BHA-YA-NA	९०१५ भयेन BHAYENA	ग - ग ५ ५ ५ ५ ५ ५ GA-NA-NA	२७८६	नरक NARAKA
ग ण - य ५ ५ ५ ५ ५ ५ GA-NA- SA	१०८३५ (९) गणस्य GANASYA	ग ण ग भ ५ ५ ५ ५ ५ ५ GA-NA-GA-A	१२७४	अगणेन AGANENA
य ण - य ५ ५ ५ ५ ५ ५ YA-NA- SA	५५५१ जनस्य JANASYA	ग ण ५ ५ ५ ५ ५ ५ GA-NA	१२००२	वन VANA
ग ण ५ ५ ५ ५ ५ ५ GA-NA	८०८० गण GANA	न य ण ५ ५ ५ ५ ५ ५ NA-YA-NA	३९८	नयनेन NAYANENA
ग ण ५ ५ ५ ५ ५ ५ GA-NA	५४९८ गणेन GANENA	अ य ण ५ ५ ५ ५ ५ ५ A-YA-NA	११९९	भयनस्य BHAYANA
ग ण ५ ५ ५ ५ ५ ५ GA-NA	३९६१ गण GANA	ग ण ग अ ५ ५ ५ ५ ५ ५ GA-NA-GA-A	१२७४	अगणेन AGANENA
अ, ण, ५ ५ ५ ५ ५ ५ A-NA	१०२२४ अण ANA	ग ण ५ ५ ५ ५ ५ ५ GA-NA	४३९६	गणेन GANENA
अ, ण, ५ ५ ५ ५ ५ ५ A-NA	२३९० ननस्य NANASYA	ग ण ५ ५ ५ ५ ५ ५ GA-NA		



 NA- RA- GA 2786	नरको NARAKA.	 NA NA 11304	नान NANA
 NA- YA- BHA- YA- NA- - SA BHAYANA 3725	नय भय न - भयनश्च NAYA - SYA	 NA - GA- JA - 5082	नागज NAGAJA
 NA NA - GA 10831	नन NANA	 NA YA A 10929	नय अ NANA
 VA- NA 2254	वन VANA.	 NA YA A 94	नय अ NANA
 A- YA- NA- 10242	अय न AJENA	 NA- A- SA 10779	न अ स NANA
 A- DHVA- NA 11390	अध्व न ADHVENA	 DA- TTA- SSA 10179	दत्त DATTASYA
 A- DHVA- NA 10830	अध्व न ADHVENA	 A- NA 5975	न अ NARA
 NA- A 4765	नर NARA	 NA- A- SA 4432	न अ स NANA
 A- DHVA- NA- YA 10103	अध्व न य ADHVANAJA	 NA- A 4179	न अ NARA
 YA- NA 4432	यन YANA	 NA- A 4179	न अ NARA
 DHVA NANA 7098	ध्व न न DHVANENA	 NA- A- SA 4432	न अ स NANA
 A- DHVA- NA- NA 2630	अध्व न न ADHVANENANA	 NA- A- SA 4015	न अ स NANA
 NA DHA 8650 (8)	धन DHANA	 NA- A- SA 4015	न अ स NANA



 VA-NA-SA	2463	वनज VANAJA	 GA-NA-SA	गणज GANAJA
 SA-NA-SA	P1-39	सुनस SUNASA	 A-DHYA-GA	अध्वग ADHYAGA.
 A-DHYA-SA	11758	अध्वस्य ADHYASYA	 A-DHYA-GA	अध्वग ADHYAGA
 GA-GA-SA	B(8)7	गगस्थ GAGASYA	 GA-GA-SA	गज GAJA
 GA-GA-SA	A(10)106	यसगज YASAGAJA	 GA-GA-SA	भयज BHAYAJA
 A-DHYA-SA	1283	अध्वस्य ADHYASYA	 GA-GA-SA	वनज VANAJA
 A-YA-SYA	2187	अजस्थ AJASYA	 VA-TTA-MMA	वर्तमान (वर्तमान?) VARTAMANA
 GA-DHA-SA	1-274	गदस्थ GADASYA	 GA-DHA-SA	भय BHAYA.
 SSA-YA	415	स्वज SVAJA	 GA-DHA-SA	ध्वज DHYAJA
 BHA-YA-SAGA-GA	231	भय.गस्थ BHAYA GAGASYA		
 YA-GA	741	गज GAJA.	 DHU-NA-FA	धूनज DHUNAJA
 A-GA-MA	7155	अगम्य AGAMYA.	 GA-DHA-NA-SYA	गोधनस्थ GODHANA-SYA.
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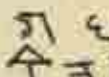
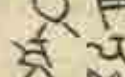
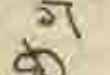
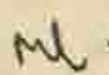
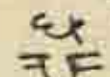



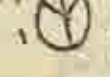
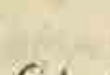
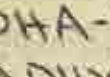
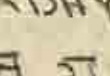
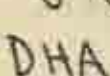

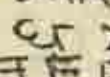
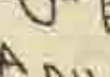
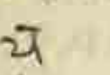
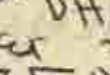
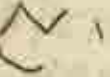
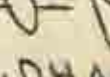



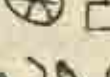
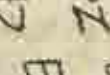
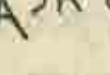

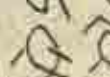

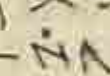


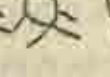


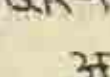
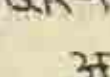


गणमय GA NA-MA-YA ध-य-ज DHA-YA-NA ध-र-र DHA-RA-DA ज-ध-अ- NA DHA अ-न-न A-NA-NA न-अ-य NA-A-YA ध-स-ज DHA-SA-NA ध-अ-म- DHA DH MA ध-स- DHA SA- ध-न-ज DHA-NA-NA ध-न-य-स DHA TTA ध-न- DHA-NA ध-न-स YA-NA-SA	ML 198 गणमय GANAMAYA ML 199 ध्यान DHYANA ML 201 धरद DHARADA ML 202 अधन ADHANA ML 204 अनृण ANR NA ML 207 नरज NARAJA ML 208 दसन DASANA ML 209 धूमधव DHUMA DHAVA ज-र-न- DASANADENA ML 217 धन DHANA ML 219 जनस्य JANASYA	ध-न-द-ध-म DHA-NA-DA DHABHA DHA-SA-NA ध-स-न DASANA ग-न- GA-NA- अ-न-अ-स A-NA-A-SA ध-य-स DHVA-YA-SA न-अ-स NA-A-SA ध-अ- DHA-A अ-ज-ध-न- A GA DHATTA ध-न-स DHA-LA-SADHARASYA ध-र-य- DHA-RA-YA ध-अ-अ-अ- DHARTTA DHVAJASYA ध-न- DHA-NA ध-न- BHA-YA न-अ- NARA	धनद॥धम DHANADA DHABHA ML 222 दसन DASANA ML 224 गण GA NA म अनस्य ANARA SYA म धजस्य DHVAJASYA म नस्य NARASYA म धर DHARA म अगधात्र AGADHAR म 230 म 232 धरस्य DHA-LA-SADHARASYA म धरज DHARAJA म धर्मधर DHARMMA -DHARA म धन DHA NA म भय BHAYA म 238 म 243
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म ग BHA-GA	M 244	म ग BHAGA	ग न ग DA NA GA	M 265	गणद GANADA
ध म य DHA-SA-YA	M 245	दासज DASAJA	ग ग GA GA	M 266	गज GAJA
न अ स NA-A-SA	M 246	नरस्य NARASYA	व म VA - MMA	M 268	वर्म VARMMA
धज गणद DHVAJA	M 247	राणाद RANADA	म य ग BHA-YA-NA	M 269	भयेन BHAYENA
अधधध A-DHA-SA-SA	M 248	अदासस्य ADASASYA	न अ NA-A	M 270	नर NARA
न अ NA-A	M 249	नर NARA	ध अ DHA-A	M 275	धर DHARA
अ ग ध ग AGA DHANA	M 251	अगधन AGADHANA	ध म DHA-LA	M 279	धर DHARA
ध य DHA-YA	M 252	धज DHVAJA	न अ NA-A	M 281	नर NABA
धर ग ध DHARA	M 253	धरगदस्य DHARAGADASYA	ध य स DHA-YA-SA	M 285	धजस्य DHVAJASYA
ग ग GA-NA	M 254	गण GANNA	ध अ DHVA-A	M 287	अध्व ADHVA
ध म DHA-TTA	M 257	दत्त DATTA	ध म स DHA-RMMA-SA	M 294	धर्मस्य DHARMMA-SYA
ग ग GA-NA	M 261	गण GANNA	ध र स DHA-RA-SA	M 298	धरस्य DHARA-SYA
ध म DHA-NA-SA	M 262	धनस्य DHANASYA	ध न DHA-NA	M 299	धन DHANA



धनगन  ML 300 धनघ्न  गदजस्य  
 DHA-NA-GA-NA DHANAGHNA  जन  
 न अ ग  ML 301 नरक  ML 329  
 NA-A-GA NARAKA  दसनज  
 ध स ग स  ML 305 दशकस्य DHA-SA-NA-YA दसनज  
 DHA-SA-GA-SA DASAKASYA  जनैः  
 ध य ग - य स  ML 306 ध य ध स  धजदासज  
 YA-DHA-YA-NA-YA-SA ADHYANAJASYA  DHVAJA  
 व न ग न व वनकन  DHA YA-DHA-SAYA DASAJA  
 व न ग न व वनकन  YANAKA  दशकस्य  
 VA NA GA NATTA NARTTA DHA-SA-GA-SA DASAKASYA  
 म य न य  मयनज  धजज  
 BHA-YA-NA-YA BHAYANAJA  DHVAJA  
 ध अ ग ग  ML 319 धूनेन  धरस्य  
 DHU NA NA DHU NENAJA GARA DHASA SYAGAJA  
 ध ग ग  धनेन  न - र ग  
 DHA-NA-NA 323 DHANENA  नरकस्य  
 ग ग -  गणस्य  ML 346 NARAKA  
 GA NA - SSA GANASYA  गणध्वजस्य  
 GA NA - DHA-YA-SA GANADHVA  
 गवः  अ म य ग  अमयनेन  
 धूमदत्त  ABHAYA  
 अगधनस्य  NENA  
 GA NA - SA AGADHANASYA  दसनस्य  
 ग ग ज  ML 326 DHA-SA-NA-SA DASANA  
 गणज  न अ -  ML 351 -SYA  
 GA NA JA 327 GANAJA  नर NARA



[illegible]



न अ ध स नरदास GA-DHA ML GADA  
NA-A-DHA-SA 439 NARADĀSA ग ध ५९६ गट्टे  
न अ नर ML नर ध-रा ML ५२६ धार  
NA-A ४४१ NARA. DHA-RA DHARA  
म य ण - य मयनज अ ध र ण ML अद्वैत  
BHA-YA-NĀ-YA ४४४ BHAYANAJA A-DHA-TTĀ-NĀ ५२३० ADATTENA  
न य ध स नयदास अ ग ण - य ML अगणज  
NA-YA-DHA-SA ४४८ NAYADĀSA A-GA-NĀ-YA ५३४ AGANĀJA  
न क ण म य नर्त्तनमय ज ध ML धन  
NA-TTA-NA-MĀ-YA ४५८ NARTTANA -MĀYA. NA-DHA ५३५ DHANA.  
ध अ अ अरुनक ज अ अरुनक ML अरोदनका  
DHA-A ४६० DHARA. A-A-DHANA ५३९ ARODANAKA  
ग ज ध ध्वजक धा व ध य ML धान्त्वज  
GA JA DHA ४६३ DHVAJAKA. DHĀTTA-DHAYA ५४१ DHARTTA  
ध म स धम्मस्य १४ ध य स ध ण म ग म दशधन  
DHA-NA-SA ४६५ DHAMASYA. DHA-SA - DHA-NĀ-SAGAYA ५४२ DASHADHAN  
ध अ स स धारस्य ML ५५३ DASADHANASYAGAJA  
DHA-A-SSA ४६६ DHARASYA. ध ण स गणस्य  
ना न न नर्त्तेन GA-NĀ-SA ५५१ GANĀSYA  
NA-TTĀNĀ-NA ४६७ NARTTANĒNA ध य र न - ध न ग ML  
ध अ ण धूनज DHA-YA-RA-NA-DHA-NA-GA ५५५  
DH Ū NĀ- ४६८ DHUNAJA ध्वज ऋण धनक  
ध अ म ध धूमव DHVAJA RĀNĀ-DHANAKA  
DH Ū MA DHA ४६९ DHŪMADA ध स ध ण य दशधनज  
ध य ण ध्यानैन DHA-SA - ॥ DHA-NĀYA ५५६ DASHADHANJ  
DHA-YA-NĀ-NĀ ४७० DHYĀNĒNA अध न ग ण त DHANĀJA  
ध र ण धारणा A-DHA-NĀ-GA-NĀ-NA १५  
DHA-RA-NĀ ४७४ DHARANĀ ADHANAGHNENĀ अघनघ्न  
ध र अध्वर ध अ म ण धूमेन  
DHVA LA ४७५ ADHVĀRA ॥ ध य म य ॥ DHUMĒNA  
ध न धार ध - ण म य स धनमयस्य  
DHA-LA ४८७ DHARA ॥ ध य ॥ ४४४ ॥ ५४४ ॥ DHANA  
ध र धार धा - NA MAYASA MAYASYA  
DHA-RA ४८८ ध ण ML २१ गण गट्टस्य  
ध ज ज ध्वज ध र ण } ML २५ GĀNĀ  
DHA-JA-JA ४९० DHVAJA GA-DHA-SA - GADASYA.  
ध म धि धम्मधि ध य अ म ध धूमव ML ३०  
DHARMHADHAR ४९४ DHARMA DHŪMADA







1. '१' - 'प्रजा, विष्णु, शिवः' शकुनप्रदीपः

'१' (११) - Rock Edict I - Girnar (Asokan Inscription) - Line 6.

2. Anarta "3 No. of a king of the solar race - 4 N. of a country or its inhabitants, or its king. (It was also called Saurashtra and may be identified with the modern Kathwar. Dwārakā was its capital, which is called Anartanagarī. There was also an important town called Valabhi - which afterwards became its capital. The celebrated Tīrtha called Prabhāsa also stood in the same peninsula.) Prin. V. S. Apte's "The practical Sanskrit - English Dictionary - Vol. I - p. 334".

Anarta is the last of the 'three characteristics' (tri - lakṣaṇa) or the general characteristics (sā - āma - lakṣaṇa) of the universe and everything in it ..... Etymologically, anarta consists of the negative prefix an plus arta (cf. Vedic Sanskrit arata). The truth of Anarta by Dr. G. P. Mahalingam (Prefatory Note).

3. Dhānta - 'Dhānta (or dhvānta ?), mystical N. of the letter n, A. Sans. Eng. Dic. M. Monier Williams - p. 515. Dhārti - 'Vridhi form of dhriti, in comb. Ibid. p. 516.  
Dhārtaya - 'N. of a war like tribe; sg. a prince of this tribe', Ibid. p. 516.
4. Dhāt - 'Shaken, agitated, distressed by heat or thirst', A Sans. Eng. Dic. Monier-Williams p. 517.
- 4a. Bhaga - "N. of an Aditya (bestowing wealth and presiding over love and marriage, brother of the Dawn, regent of the Nakshatra Uttara - Phalgunī; Yaska enumerates him among the divinities of the highest sphere; according to a later legend his eyes were destroyed by Rudra) ib. a & c; the Nakshatra U - Ph, MBh. vi, 81; the sun, ib. iii, 146; the moon, L; N. of Rudra, MBh"; Monier Williams. A Sans. Eng. Dic. p. 743.

Bhaga :- "They are the seven sons of the Vispati, the lord of creation. They are symbolized in the seven Adityas (sons of Aditi), Mitra, Aryaman, Bhaga, Varuna, Dyaus, Anś and Vivasvān (Rgveda, x, 72, 9) and the seven priests, Hotr, Potr, N. str, Agnīdh, Prostr, Adhvaryu and Brahman". Rgveda and the Indus Valley civilization - Dr. Buddha Prakash p. 35.

Bhaga - "A Vedic god and Aditya, regarded chiefly as dispensing fortune; brother of Ushas" Antiquities of India, p.19.

5. धनंजयः - 'चिद्रूपः। इति मेदिनी-। शब्दकल्पद्रुमः।

6. Agada :- 1. A medicine, a medicinal drug. 2. Health, freedom from disease.

Prin. V.S. Apte's The Prac. Sans. Eng. Dic. Vol. I, p.12, "aggada, m. Skr. agada drug, antilote" Sakh - Studies "Stan Konow" - p.114.

7. Gada :- "N. of a son of Vasa-deva and younger brother of Krishna MBh., Hariv.; BhP.; of another son of Vasa-deva by a different mother, ix, 24; 51"; a Sans. Eng. Dic. M. Monier Williams, p.344. "Of Kubera" Prin. V. S. Apte's - 'The Prac. Sans. Eng. Dic. Vol. II' - p.546.

Gadha :- 'ground for standing on in water' (N. of a people) A Sans. Eng. Dic. M. Monier Williams, p.353.

7a. Ānana :- Pīnatthapāṭṭhambhīṇana = pīnatthapāṭṭhambhīṇana. R. Fischer - Comparative Grammar of the Prakrit Languages §160.

7b. 8, 8a, 10 :- Gadhara, Gandhara, Gandhara, Gandhala :- An interesting thing is to be stated here that in the inscriptions of Achaemenid, there are words like Gadhara, Gandhala, Gandharasya etc. These words I think most probably mean Gandhāra. "There are five columns at Behistan containing the inscriptions of the Achaemenid King Darius, the great .....

In column I Darius gives a list of 25 countries "then came to" him. In this

list we find two names that are Indian viz., Ga (h) dara or Gandhara and

Qatagus or Sattagydia". The Achaemenids in India by Sudhakar Chattopadhyaya,

p.6. "The South Tomb at Parsapalis is usually assigned to Artaxerxes

II (404-395 B.C.) on artistic grounds. Here is/inscription" - a portion of

which reads - "iam Qatagaviya (this is a Sattagyidian); iyan Ga (h) dariya

(this is a Gandharian); iyan Hi (h) duviya (this is a Hi (h) du)" Ibid.

p.14. This word "Gadariya" means Gandharian. So Gadhara in the Indus

inscription has strong similarity with the Indo-Iranian word Gadariya

which means an inhabitant of Gandhāra.

Gandhara :- "Of a people" A Sans. Eng. Dic. M. Monier Williams, p.346.



- 8b. Agam :- 'a mountain', 'a tree'. A Sans.Eng.Dic. M. Monier Williams, p.4.
9. Dhara "N. of a Vasu, MBh.; of a follower of the Pāṇdavas, Ib.; of the king of the tortoises; L.; of the father of Padmaprabha (6th Arhat of pres. Ava-Sarpini)". A Sans.Eng.Dic. M. Monier Williams, p.510. Tod says that Māndhātā was a king of central India 'whose capitals were Dhār and Ujain', A.R.A.S.I. 1871-73, p.163.
- 9a. Gagasya :- One seal with the inscription Gagasya was obtained from Bhita Excavation. "Excavation at Bhita" A.R.A.S.I., 1911-12, p.57.
- 9b. Ga. Gadhama, 'a kind of arrow, Hariv.8865'. A Sans.Eng.Dic. M. Monier Williams, p.353.
11. Datta :- "The word for a ruined city or settlement was arma or armaka ..... Pāṇini and the Aśīka mentions the following - arma-ending place names. Bhūtarma, Adhikarma, Sañjivarma, Madharmā, Asmārmā, Kajjilārmā, Dattarma, Guptarma, Kakutarma, Vayasarma, Brhadarma, Navarma, etc." 33b. Raychaudhuri and the Indus Valley civilization Dr. Buddha Prakash, p.83. ...
- Foot note :- "33b. T. Burrow. 'On the significance of the term arma-armaka in the Early Sanskrit Literature', Journal of Indian History, XLI (1963) 159-66.
12. Dhama :- One Seal with the inscription Dhamasya was obtained from Basarh Excavation. Excavation at Basarh. A.R.A.S.I. 1913-1914, p.145.
13. Ag - 1. a tree. 2. a mountain. 3. a Sanha. 4. The sun. Prin. V. S. Apte's. "The practical Sans.Eng.Dic. Vol.I, p.11.
14. Dhama :- One inscription inscribed with Amētya Dhamadevasya (Amētya Dhamadevasya) was obtained from Bhita excavation. A.R.A.S.I. 1911-12. Excavation at Bhita, p.53. Dhama - "m. (only L.) the moon; N. of Brahman; of Yama; of Vishnu". M.Monier Williams - A Sans.Eng.Dic. p.509.





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